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ENGLISH BOTANY.

ENGLISH BOTANY;

OR,

COLOURED FIGURES

OF

BRITISH PLANTS.

EDITED BY JOHN T. BOSWELL SYME, F.L.S. ETC.

THE POPULAR PORTION BY MRS. LANKESTER,

AUTHOR OF "WILD FLOWERS WORTH NOTICE," "THE BRITISH FERNS," ETC.

THE FIGURES BY

J. SOWERBY, F.L.S., J. D^r C. SOWERBY, F.L.S., J. W. SALTER, A.L.S., F.G.S

AND

JOHN EDWARD SOWERBY

ILLUSTRATOR OF THE "FERNS OF GREAT BRITAIN," "GRASSES OF GREAT BRITAIN,"

"WILD FLOWERS WORTH NOTICE," ETC. ETC.

Third Edition,

ENLARGED, RE-ARRANGED ACCORDING TO THE NATURAL ORDERS,
AND ENTIRELY REVISED.

WITH DESCRIPTIONS OF ALL THE SPECIES BY THE EDITOR.

VOLUME X.

JUNCACEÆ TO CYPERACEÆ.

LONDON:

GEORGE BELL & SONS, YORK STREET, COVENT GARDEN;
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ENGLISH BOTANY.

ORDER LXXXV.—**ERIOCAULONACEÆ**.

Perennial marsh or aquatic herbs with fibrous roots and the leaves all radical or situated on a short stem. Leaves linear, grasslike, slightly fleshy, sometimes loosely reticulated, half sheathing at the base. Flowers minute, unisexual, monœcious or rarely diœcious, supported on simple scapes with sheaths at the base; each flower in the axil of a scarious bract. Perianth free from the ovary, scarious, usually double, outer whorl (calyx) of 2 or 3 keeled sepals, inner whorl (corolla) tubular, 2- or 3-lobed, rarely absent. Stamens as many as the lobes of the calyx, or twice as many; anthers 2-celled, introrse. Ovary free from the perianth, 2- or 3-celled; ovules solitary in each cell, pendulous; style short, simple; stigmas as many as the cells of the ovary, undivided or 2-cleft. Fruit a capsule, surrounded by the persistent perianth and crowned by the style, loculicidally 2- or 3-valved. Seeds 2 or 3, scaly or hairy in longitudinal lines; albumen copious, farinaceous.

GENUS I.—**ERIOCAULON.** *Linn.*

Flowers monœcious, very rarely diœcious; in the former case the male and female flowers either intermixed, or the central ones male and the exterior female. Male flowers with the calyx of 2 or 3 keeled or boat-shaped sepals: corolla tubular with two or three lobes: stamens 4 or 6; anthers 2-celled: pistils abortive. Fertile flowers with the calyx of 2 or 3 sepals: corolla of 2 or 3 narrow petals: stamens none: ovary frequently stalked, 2- or 3-celled; ovules 1 in each cell; style single, with 2 or 3 stigmas. Capsule membranous, loculicidal.

Herbs with a tuft of loosely cellular linear leaves, and naked scapes terminated by a single head. Flowers intermingled with bracts clothed with thick white scales at the tip.

The name of the typical genus of the natural order *Eriocaulaceæ* is derived from two Greek words, meaning "wool" and "stem," on account of the woolly character of the stalks of some of the species.

SPECIES I.—**ERIOCAULON SEPTANGULARE.** *With.*

PLATE MDXLVI.

E. decangulare, *With. Light. Fl. Scot. Vol. II. p. 569. (Non Linn.)*

E. pellucidum, *Mich. Test. Asa Gray.*

Leaves short, pellucid, very cellular, subulate, glabrous. Scapes slender, with 6 to 8 striæ. Sepals 2. Petals or segments of the corolla 2. Stamens 4.

In lakes, very local. "In the Isle of Skye, in two or three small fresh-water lochs about a mile west of Loch Sligachan, particularly in a small lake called Loch-na-Caiplich, close to the roadside, between Sligachan and Drynoch" (*Light.*); also in Col and a few of the neighbouring islands of the Hebrides (*Brit. Fl.*). Along the west coast of Ireland near the sea, from Cromeen Lakes, eight miles below Kenmare, co. Kerry, north to Rathlin Island, co. Antrim: abundant in Connemara.

Scotland, Ireland. Perennial. Autumn.

Rootstock shortly creeping, thick, slightly branched, emitting numerous thick white fibres resembling those of *Lobelia Dortmanna*, to which the leaves also bear a slight resemblance. Leaves numerous, distributed over the very short stem, 1 to 4 inches long, dilated at the base, laterally compressed, green, divided by longitudinal and transverse septa. Scape varying from a few inches to 2 to 3 feet in height, according to the depth of the water, slightly twisted, with 6 to 8 (rarely more) raised lines. Head solitary, terminal, $\frac{1}{4}$ to $\frac{1}{2}$ inch across, surrounded by an involucre of scarious lead-coloured bracts. Male flowers in the centre, surrounded by the female ones. Sepals dark lead-coloured with a thick white beard. Petals white, fringed, with a dark spot at the apex. Anthers lead-colour. Ovary shortly stipitate, 2-lobed.

I am indebted to Mr. Charles Bailey of Manchester for fresh specimens of this plant from Connemara.

Pipewort.

This is the only British species of the genus, although a hundred have been described found growing in the principal parts of Asia, America, and New Holland. Some of those found in Brazil attain a height of six feet.

ORDER LXXXVI.—JUNCACEÆ.

Perennial or annual sedgeliike herbs with creeping or tufted root-stocks and usually with cylindrical or grasslike leaves shortly sheathing at the base, rarely with the leaves reduced to scales at the bottom of leafless stems. Flowers perfect, regular, solitary or in fascicles, arranged in spikes, heads, or umbellato-corymbose panicles. Perianth free from the ovary, of 6 leaves in two rows; perianth leaves all similar, scarious, and resembling in texture the glumes of grasses and sedges. Stamens 6, opposite, the perianth segments inserted in their bases, rarely subhypogynous, or 3 opposite the outer perianth segments; anthers affixed by the base, introrse. Ovary free from the perianth, 3-celled, sometimes incompletely so; ovules numerous in each cell or 3 in all, in the genus in which the ovary is 1-celled; style terminal, simple; stigmas 3; capsule loculicidally 3-valved. Seeds minute, the testa often raised from the seed at the ends; albumen densely fleshy; radicle next the hilum.

GENUS I.—LUZULA. D.C.

Perianth 6-leaved; perianth-leaves scarious, brown or green and brown or coloured. Stamens 6. Capsule 1-celled, 3-valved. Seeds 3, at the base of the capsule.

Perennial herbs, often hairy with flat or channelled grass-like leaves, and flowers in a terminal umbellato-corymbose panicle; some species with the primary rachis very short and the lower lateral branches long and the flowers lax or collected into heads at the extremity of the branches: in other species with the rachis elongated and the lateral branches short, so that the inflorescence resembles a spike.

The name of this genus of plants is derived from the Italian name for the glow-worm, so called from its shining capsules.

SECTION I.—PILOSÆ.

Flowers solitary, arranged in a lax umbellato-corymbose panicle, with the lower branches cymosely branched. Perianth leaves brown or fawn-coloured. Seeds with a conspicuous appendage at the apex.

SPECIES I.—**LUZULA FORSTERI.** *D.C.*

PLATE MDXLVII.

*Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCLXXXII.**Billot, Fl. Gall. et Germ. Exsicc. No. .**Luciola Forsteri. Sm. Engl. Fl. Vol. II. p. 179.**Juncus Forsteri. Sm. Eng. Bot. ed. i. No. 1293.*

Cespitose with very short slender stolons. Stems numerous. Radical leaves linear, narrowed at both ends, nearly flat, rather soft, fringed with long soft hairs; stem leaves similar to the radical leaves, but shorter, not much narrower than the radical leaves. Flowers solitary, in a rather lax * umbellato-corymbose panicle; the lower branches elongate, once cymosely branched at the apex, ascending and subsecund when in fruit, not divaricate; fruit pedicels ascending, twice or thrice as long as the perianth leaves. Bracts lanceolate, acuminate-aristate. Perianth leaves gradually acuminate, scarcely longer than the capsule, reddish-brown, with pale margins and midrib. Filaments about as long as the anthers. Capsule broadly ovate, trigonous, acuminate-acute. Seeds roundish-ovoid, chestnut, with a long straight blunt whitish appendage at the apex.

In woods, thickets, and in hedgebanks; particularly in chalky soils. Local, and confined to the south of England, extending from Devon, Isle of Wight, and Kent, north to Cardigan, Worcester, and Essex.

[England.] Perennial. Early Summer.

Plant growing in tufts with numerous radical leaves 4 to 9 inches long by $\frac{1}{8}$ to $\frac{1}{4}$ inch broad, the greater number of them not surviving to the time when the fruit is ripe. Flowering stems numerous; at first erect, afterwards lying over to one side, 6 to 18 inches high when in fruit. Stem leaves considerably shorter than the radical leaves, with long tightly-fitting closed sheaths. Panicle with the lower branches in fruit 1 to 2 inches long, sheathed at the base, with a bract beneath the sheath, forked at the apex, one of the branches of the fork a little below the other, with a sessile flower in the fork and a single one at the termination of each of the branches of the fork, sometimes with a third branch below the others; the upper branches 1-flowered. Bracteoles 2 or 3, close underneath the flowers, shorter than the perianth segments, ovate-lanceolate; the lower one sometimes acuminate; the upper acute or subobtus. Perianth segments $\frac{1}{6}$ inch long, very acute, reddish-brown, with broad pale margins; the midribs, especially

* The inflorescence is described as it appears when in fruit, as all the species of *Luzula* have it dense in the early stage.

of the 3 outer segments, commonly darker toward the apex; the outer leaves keeled, the inner ones flat. Anthers yellowish-white, about as long as the filaments, or a little longer. Capsule fawn-colour, a very little shorter than the perianth. Seeds scarcely as large as maw seed, rather dim, with a conspicuous pale crest.

Narrow-leaved Hairy Woodrush.

French, *Luzule de Forster*. German, *Forster's Marbel*

SPECIES II.—**LUZULA PILOSA.** Willd.

PLATE MDXLVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCLXXXI.

Billot, Fl. Gall. et Germ. Exsicc. No. 1346.

L. vernalis, D.C. Kunth. Enum. Pl. Vol. III. p. 297.

Luciola pilosa, Sm. Engl. Fl. Vol. II. p. 178.

Juncus pilosus, Linn. Sm. Engl. Bot. No. 736.

Cæspitose, with short slender stolons. Stems few. Radical leaves broadly linear, narrowed at both ends, flat, soft, fringed with long soft hairs; stem leaves much shorter and narrower than the radical leaves. Flowers solitary, in a very lax umbellato-corymbose panicle; lower branches elongate, once cymosely branched at the apex, divaricate in fruit; fruit pedicels diverging, four to five times as long as the perianth leaves. Bracts ovate, acute. Perianth leaves ovate-lanceolate, acute, rather shorter than the capsule, fuscous-brown, with pale margins and midrib. Filaments about half as long as the anthers. Capsule broadly-ovate, when containing perfect seeds subtruncate, and suddenly contracted at the apex, which is abruptly apiculate. Seeds roundish-ovoid, chestnut, with a conspicuous curved and pointed whitish appendage at the apex.

Var. *α*, *genuina*.

PLATE MDXLVIII.

Capsule blunt and apiculate, longer than the perianth leaves. Seeds perfect.

Var. *β*, *Borreri*.

L. Borreri, Bromf. Fl. Vect. p. 517.

Capsule acute, shorter than the perianth leaves. Seeds abortive. Plant taller and more slender than var. *α*.

In woods, thickets, and shady hedgebanks. Not uncommon, and generally distributed. Rather local in Ireland, where it has not been noticed on the west side of the island. Var. *β*, at Apse Castle near

Shanklin and Quarr, Isle of Wight; near Luggers' Hall, under Blackdown, Sussex; Tunbridge Wells, Kent; Telegraph Wood, Claygate, Surrey; Ross, Herefordshire; Devil's Glen, Wicklow.

England, Scotland, Ireland. Perennial. Late Spring.

Very similar to *L. Forsteri*, with which Mr. Bentham combines it, but the stolons are longer, the stems are usually less numerous in each tuft, more slender, the root leaves twice as broad, the branches of the corymb more capillary, the lower ones fewer-flowered, divaricate or reflexed, and not at all secund in fruit; pedicels of the lower branches of the panicle longer; bracts broader and less attenuated at the apex; perianth leaves much darker in the middle, with the exception of the pale central line; capsule shorter and more truncate at the apex, at least when there are perfect seeds; ripe seeds rather larger, and with a considerably longer more pointed and falcate crest.

L. Borreri, *Bromf.* (*Bab. Man. Brit. Bot. eds. iii. and iv.*), is now generally admitted to be a sterile form of *L. pilosa*; its occurrence in Ireland appears conclusive evidence against its being a hybrid between *L. pilosa* and *L. Forsteri*, as the latter plant does not occur in Ireland. In the English stations it appears to grow in company with the normal form of *L. pilosa* and *L. Forsteri*. It is usually a taller plant than the ordinary *L. pilosa*, the stems being frequently 18 inches high, the leaves are narrower, the branches of the panicle shorter, though equally reflexed after flowering, the perianth leaves narrower and more acute, and the capsule narrower and gradually attenuated, not evidently truncate. This last, which is the most important difference, no doubt is in consequence of the seeds never coming to their full size so as to press out the lower portion of the capsule. Mr. H. C. Watson has cultivated *L. Borreri* for several years, but the seeds never arrive at maturity, but shrivel up when about half-grown; and from the half-grown seeds of *Luzula* the distinctive character of the crest cannot be ascertained.

Broad-leaved Hairy Woodrush.

French, *Luzule poilue*. German, *Behaarter Marbel*.

SECTION II.—MAXIMÆ.

Flowers rarely solitary, generally in small cymose fascicles in a lax or rather lax umbellato-corymbose panicle, with cymose branches. Perianth leaves chestnut, or yellow, or white, or purplish. Seeds without an apical crest or with a very inconspicuous one.

SPECIES III.—*LUZULA SYLVATICA*. Beck.

PLATE MDXLIX.

*Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCXC.**Billot, Fl. Gall. et Germ. Exsicc. No. 864.**L. maxima, D.C. Kunth. Enum. Pl. Vol. III. p. 304. Fries, Summ. Veg. Scand. p. 66. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 845.**Luciola sylvatica, Sm. Engl. Fl. Vol. II. p. 180.**Juncus sylvaticus, Huds. Sm. Engl. Bot. ed. i. No. 737.**J. maximus, With. Bot. Arr. Vol. I. p. 349.*

Subcæspitose, with rather short thick stolons. Stems solitary or few, but each one accompanied by several barren tufts. Radical leaves broadly linear, tapering most towards the apex, widely channelled, firm, thinly fringed with long silky hairs; stem leaves very small. Flowers very numerous, in fascicles of 2 to 5, in a very lax umbellato-corymbose panicle; the lower branches elongate, twice or three times cymosely branched at the apex, divaricate in fruit; ultimate branches divaricate, much longer than the flowers, except in specimens in which the inflorescence is most decomposed. Bracts lanceolate, acute. Perianth leaves elliptical-lanceolate, acuminate-mucronate, about as long as the capsule, dark chestnut, with pale margins and a green midrib. Capsule broadly ovate, trigonous, mucronate. Seeds roundish-ovoid, very dark brown, with a minute whitish tubercle at the apex.

In woods, on heaths, and on mountains. Frequent, and generally distributed; rather scarce in the south-east of England.

England, Scotland, Ireland. Perennial. Early Summer.

Rootstock decidedly creeping, each branch of it producing but a single flowering stem, accompanied by several barren tufts. Leaves much firmer in texture than those of *L. Forsteri* and *L. pilosa*, more tapering towards the apex, and distinctly channelled, 3 inches to 1 foot long by $\frac{1}{4}$ to $\frac{1}{2}$ inch or more in breadth at the base. Stem rather stout, 9 inches to 2 feet high, with a few leaves, the lamina of which is commonly shorter than the sheath. Fruit panicle with the lower branches $1\frac{1}{2}$ to 4 inches long, several times compound at the apex, the upper branches much shorter, and the uppermost terminated by a single head of flowers. Perianth leaves $\frac{1}{10}$ inch long. Capsule considerably smaller than that of the two preceding species, hidden by the connivent perianth leaves. Seeds similar to those of *L. Forsteri*, but darker, and with only a small tubercle at the apex instead of an appendage half as long as the seed.

Great Woodrush.

French, *Luzule à larges feuilles*. German, *Wald-Marbel*.

SECTION III.—CONGESTÆ.

Flowers collected into roundish or ovoid headlike spikes, which are sometimes all subsessile and in a head or spike, and sometimes the lower ones are at the extremity of elongate branches disposed in an umbellato-corymbose panicle; these branches are usually simple or rarely once cymosely branched at the apex; in a few species the panicle is contracted into a curved compound spike. Perianth leaves pale or dark brown. Seeds without an apical appendage, or with an inconspicuous one, rarely with a distinct one, but often with a basal caruncle.

SPECIES IV.—**LUZULA CAMPESTRIS.** *D.C.*

PLATE MDLI.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCLXXV.

Billot, Fl. Gall. et Germ. Exsicc. No. 1772.

L. campestris, var. α , *Hook. & Arn.* Brit. Fl. ed. viii. p. 467.

Luciola campestris, *Sm.* Engl. Fl. Vol. II. p. 181.

Juncus campestris, *Linn.* *Sm.* Engl. Bot. ed. i. No. 672.

Not cæspitose, with rather elongate stolons. Stems solitary or few, contemporaneous. Radical leaves narrowly linear, tapering most towards the apex, widely channelled, soft, thickly clothed at the margins with long soft hairs; stem leaves few, smaller than the radical leaves. Flowers in roundish-ovoid spikes, usually 3 or 4, but occasionally 5 to 10 in the spike. Spikes few, in a simple umbellato-corymbose panicle or head; the lower spikes supported on filiform slightly drooping unbranched peduncles, the upper spikes or rarely all of them subsessile. Bracts ovate, acuminate or aristate, fringed. Perianth leaves lanceolate, the outer ones acuminate, the inner ones mucronate, a little longer than the capsule, pale or dark brown with pale edges. Filaments not a quarter of the length of the anthers. Capsule broadly oblong-turbinate, bluntly trigonous, rounded and shortly mucronate at the apex. Seeds small, ovoid-subglobular, brown, without an apical crest, but with a whitish basal caruncle, which is but little shorter than the rest of the seed.

Var. α , *umbellata*.

Lower spikes on elongated drooping peduncles.

Var. β , *congesta*.

Spikes all subsessile.

In dry fields and pastures, and uncultivated ground. Very common, and universally distributed.

England, Scotland, Ireland. Perennial. Late Spring, early Summer.

Rootstock branched, creeping, sometimes to a considerable distance, each branch producing at the apex 1 (or more rarely 2 or 3) flowering stems and a few barren shoots, but these are all generally slightly separated from each other. Flowering stems 3 inches to 1 foot high, very slender, leafy at the base, and with 1 to 3 stem leaves, which are equal to or a little longer than their sheaths. Lowest bract or 2 bracts foliaceous, commonly shorter than the peduncles. Spikes 2 to 5, the lower flowers spreading, at least when in fruit. Bracts white, shining, fringed with soft hairs. Perianth leaves about $\frac{1}{8}$ inch long, varying from light to dark brown, the margins and sometimes the base much paler. Capsule chestnut. Seeds about $\frac{1}{12}$ inch long, of which the basal caruncle is nearly one half. Leaves slightly shining, reddish-brown at the base.

Field Woodrush.

French, *Luzule des champs*. German, *Gemeiner Marbel*.

SPECIES V.—**LUZULA MULTIFLORA.** *Koeh.*

PLATE MDL.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCLXXVI. and CCCLXXVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1773.

L. congesta, Lej. Hook. in E. B. S. No. 2719.

L. campestris, var. β. Hook. & Arn. ed. viii. p. 467

Luciola congesta, Sm. Engl. Fl. Vol. II. p. 181.

Juncus campestris, var. γ, Linn. Spec. Pl. p. 469.

Cespitose, with very short stolons. Stems numerous, appearing in succession. Radical leaves narrowly linear or linear, tapering most towards the apex, widely channelled, rather soft, clothed at the margins with long soft silky hairs or subglabrous; stem leaves several, about as long as the radical leaves, but often broader. Flowers in ovate-ovoid or oblong-ovoid spikes, usually numerous, rarely only 5 or 6 in each spike. Spikes usually numerous, in a simple umbellato-corymbose panicle; lower spikes supported on firm erect peduncles, which are simple or sometimes once cymesely branched; the upper spike or frequently all of them sessile. Bracts triangular-lanceolate, acuminate, fringed. Perianth leaves narrowly lanceolate, all of them acuminate, the outer ones almost subulate at the point, a little longer than the capsule, pale or dark brown with pale edges. Filaments about half as long as the anthers. Capsule broadly oblong-turbinate, bluntly

trigonus, rounded, and apiculate at the apex. Seeds broadly oval-ovoid, brown, without an apical crest, but with a whitish basal caruncle, which is about half the length of the rest of the seed.

Var. α , *umbellata*.

L. multiflora, *Lej.* *D.C. Fl. Fr. Vol. V. p. 306.*

Leaves hairy on the margin. Lower spikes on elongated erect peduncles. Perianth leaves nearly equal.

Var. β , *congesta*.

L. congesta, *Lej.* *D.C. Fl. Fr. Vol. V. p. 305.*

Leaves hairy at the edges. Spikelets all subsessile in a roundish lobed head. Perianth leaves nearly equal.

Var. γ , *Sudetica*.

L. Sudetica, *D.C. Fl. Fr. Vol. V. p. 306.*

L. multiflora, var. γ , *nigricans.* *Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 847.*

Leaves subglabrous or hairy only at the base. Lower spikes usually on short erect peduncles. Outer perianth leaves longer than the inner. Capsule shorter and darker brown than in the other varieties.

On heaths, moory ground, and in open woods. Common, and generally distributed. Var. γ in alpine situations, probably common, but the only specimens I have seen are from Glen Callater, Aberdeenshire.

England, Scotland, Ireland. Perennial. Late Spring to Autumn.

Very similar to *L. campestris*, but I believe a perfectly distinct species. It is much more caespitose, often forming large tufts, which throw up flowering stems one after the other during the whole summer. The whole plant is larger and stouter; the stem-leaves longer and firmer. The spikes are usually more numerous, from 5 to 12 in number; the lowest spike sometimes with one or two smaller spikes on short peduncles immediately below it at the end of the primary peduncle. The flowers are more numerous in each spike, so that the form of the spike is longer in proportion to its thickness. The perianth leaves are narrower and more acuminate, even the inner ones being gradually narrowed to the apex. The filaments are longer. The capsule is less turbinate and with a shorter point. The seeds are less globular and have a caruncle only half as long.

The var. γ appears to be merely an alpine form of *L. multiflora*, though many botanists consider it a distinct species.

Many-headed Woodrush.

French, *Jonc multiflore.* German, *Gemeiner Marbel.*

SPECIES VI.—*LUZULA ARCUATA*. Hook.

PLATE MDLII.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCLXXVIII. Fig. 840.

Luciola arcuata. Sm. Engl. Fl. Vol. II. p. 183.

Juncus arcuatus. Wahl. Fl. Lap. p. 87.

Subcæspitose, with rather long stolons. Stems solitary. Radical leaves very narrowly linear, tapering most towards the apex, channelled, recurved, thick and firm, clothed at the margins only near the base of the leaf with a few soft caducous hairs; stem with 1 or 2, similar to the radical ones, but smaller. Flowers in small subglobular spikes, few, rarely more than 3 to 5 in each spike. Spikes few, in a subumbellato-corymbose panicle; lower spikes supported on capillary recurved peduncles, which are simple or once cymosely branched at the apex; uppermost spike subsessile. Bracts narrowly lanceolate, acute, sparingly ciliated at the apex. Perianth leaves lanceolate, acute, a little longer than the capsule, pale brown with narrow pale margins. Capsule subglobular, trigonous, very shortly and abruptly acuminate-apiculate. Seeds oblong-ovoid, dark brown, without an apical crest, but with a very minute indistinct pale basal caruncule.

On stony débris on the tops of high mountains. Very local. Plentiful on the tops of the Cairngorm Mountains, on the confines of Aberdeen, Banff, Inverness; Cairn-Towl, Ben-mac-Dhui, Braeriach, and more sparingly on Ben Avon, also near the summit of Loch-na-Gar, Aberdeenshire; and, according to Dr. Graham, in Sutherland on the summit of Fonniven, and also on the ridge leading to the top of Ben More, Asynt, ascending from Inchnaduff.

Scotland. Perennial. Late Summer, Autumn.

Plant growing in loose tufts. Leaves 1 to 3 inches long, leathery in texture. Stems 2 to 6 inches high. Lowest peduncle $\frac{1}{2}$ to 2 inches long. Perianth leaves $\frac{1}{8}$ inch long, nearly concolorous, the pale margins being very narrow. Filaments nearly as long as the anthers. Capsule pale reddish-brown. Seeds considerably smaller than those of *L. campestris* and *L. multiflora*, and with scarcely any caruncule at the base. Panicle branched like that of the *Maximæ* group, but the individual spikes are much more similar to those of the *Congestæ*, with which it is still further connected by Arctic *L. hyperborea*, *R. Br.*

Curved Alpine Woodrush.

SPECIES VII.—*LUZULA SPICATA*. D.C.

PLATE MDLIII.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCLXXIX.*Billot, Fl. Gall. et Germ. Exsicc.* No. 2948.*Luciola spicata.* *Sm. Engl. Fl.* Vol. II. p. 182.*Juncus spicatus, Linn.* *Sm. Engl. Bot.* No. 1176.

Caspirose, with very short stolons. Stems few. Radical leaves very narrowly linear, channelled, usually recurved, rather thick and firm, clothed at the margins with a few soft hairs, which are caducous, except at the base of the leaf; stem leaves similar to the radical ones, but smaller. Flowers in ovoid or cylindrical spikes, numerous in each spike. Spikes all subsessile or the lowest one shortly stalked, combined into an oblong spikelike panicle frequently interrupted at the base and drooping at the apex. Bracts lanceolate-acuminate-aristate, sparingly ciliated. Perianth leaves strapshaped-lanceolate acuminate-aristate, longer than the capsule, chestnut or pale brown, with very narrow pale edges. Filaments half as long as the anthers. Capsule subglobular, trigonous, shortly and abruptly acuminate-apiculate. Seeds oblong-obovate, with scarcely any terminal crest, but with a very small white caruncule at the base.

In damp grassy and heathy places and on ledges of rocks, in mountainous districts. Rather common. In England it occurs on the Carnarvonshire mountains and in the Lake district; in Scotland it is frequent on mountains above 2,000 feet high, in their vicinity sometimes descending to about 1,000 feet, as between Invercauld Bridge and the Castleton of Braemar, Aberdeenshire.

England, Scotland. Perennial. Summer, early Autumn.

Plant growing in small tufts with rarely more than 6 or 7 stems in each tuft and often with only 2 or 3. Radical leaves 2 to 6 inches long, resembling those of *L. arcuata*, but thinner in texture and less deeply channelled. Stems slender, 4 to 18 inches high. Panicle $\frac{1}{2}$ to 2 inches long, at first erect, afterwards drooping, the longer ones especially. Lowest primary bracts longer than the spikes at the base of which they are situated. Spikes $\frac{1}{8}$ to $\frac{3}{4}$ inch long. Partial bracts silvery white or chestnut with long bristly points. Perianth leaves about $\frac{1}{8}$ inch long, narrower in proportion to their length than in the other British species. Capsule similar to that of *L. arcuata*, but the seeds are a little larger and with a more distinct basal caruncule, which however is very much less developed than in *L. multiflora* and *L. campestris*.

Spiked Woodrush.

French, *Luzule en épi.* German, *Ahriger Marbel.*

GENUS II.—JUNCUS. *Linn.*

Perianth 6-leaved; perianth leaves scarious, brown or green and brown or greenish white. Stamens 6, more rarely 3. Capsule 3-celled, or rarely 1-celled from the dissepiments not reaching to the apex, 3-valved. Seeds numerous, attached to the partition in the middle of each of the valves.

Glabrous perennial or annual herbs, with the leaves reduced to sheaths or fistulous or very slender and often somewhat rigid. Inflorescence in a terminal umbellato-corymbose panicle, with a very short primary rachis and long lower branches, or sometimes contracted into a head.

The name of this genus comes from the word *jungo*, I join; some of the species being used for traces, and also for many purposes when joined or plaited together.

SECTION I.—STYGII. *Fries.*

Perennial. Stem solid. Leaves slender, chiefly radical, or more rarely distributed over the stem, narrowly linear, solid or fistulose, not articulated. Flowers few, collected into a terminal head, sometimes pseudo-lateral from the lowest bract forming an apparent continuation of the stem, occasionally with a second head below the terminal one. Seeds with the testa produced into an appendage at both base and apex.

SPECIES I.—JUNCUS TRIFIDUS. *Linn.*

PLATE MDLIV.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCXCIV. Fig. 869.

Billot, Fl. Gall. et Germ. Exsicc. No. 673.

Densely caespitose. Branches of the rootstock elongate, producing a number of stems closely placed one before the other. Stems numerous, slender, wiry, with several sheaths at the base; the lower sheaths leafless, the uppermost with a short leafy point, above which the stem is leafless except at the apex, where a short distance below the flowers there is a single sheathing filiform leaf, with lacinate auricles at the base of the lamina. Inflorescence a single head with 2 long filiform foliaceous bracts resembling the stem leaf and very greatly exceeding the flowers, rarely there is a second axillary head or solitary flower in the axil of the uppermost stem leaf. Flowers usually 3, more rarely 1 or 2 in the head. Perianth leaves lanceolate, acuminate, chestnut-brown, with narrow pale margins, shorter than the capsule.

Capsule oval-ovoid, acuminate into a subulate beak of about a third of its own length. Seeds large, pyramidal, with a very short whitish apical appendage.

On rocky ledges, and among loose gravel on high mountains. Frequent in the Scotch Highlands, from the Dumbartonshire, Perthshire, and Forfarshire mountains north to Skye and Sutherland.

Scotland. Perennial. Late Summer, early Autumn.

Plant growing in dense tufts, formed by the numerous branches of slender tough almost woody rhizome, each branch of which produces numerous stems one before the other, intermingled with sheaths of the stems of former years; lowest sheaths broadly ovate-mucronate; upper ones with subulate points; the uppermost sheath terminating in a narrow bayonet-shaped leaf from $\frac{1}{4}$ to 1 inch long. Stems 2 to 8 inches high, with a filiform channelled leaf near the apex, of 1 to 5 inches long; shortly above this there are 2 bracts similar to the upper stem leaf, which gives the apex of the stem the trifid appearance whence the plant takes its name. Terminal leaf and bracts all erect, and all attaining nearly the same height, which, however, varies considerably. Perianth leaves about $\frac{1}{6}$ inch long. Capsule shining, chestnut or chocolate brown, with a long beak. Seeds much fewer and larger than is common in the genus *Juncus*, with a much shorter appendage than in the others belonging to the section *Stygi*.

Three-leaved Rush.

French, *Jonc à trois pointes*. German, *Dreispalrige Binse*.

SPECIES II.—*JUNCUS CASTANEUS*. Sm.

PLATE MDLV.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCXCHII. Fig. 868.

Not caespitose. Rootstock producing long stolons scaly at the apex. Stems solitary. Leaves few, distributed over the whole stem, fistulous, semicylindrical, channelled above; sheaths without auricles. Inflorescence of 1 or 2 (rarely 3) heads; in the latter cases with one head above the other; upper head pseudo-lateral while in flower, but terminal when in fruit. Lowest bract foliaceous, equalling or twice or thrice as long as the head. Flowers 3 to 8 in each head. Perianth leaves narrowly elliptical-lanceolate, acute, chestnut-brown, half as long as the capsule. Capsule oblong-prismatical, abruptly acuminate into a subulate beak about one-sixth the length of the capsule. Seeds large, fusiform, with a long white appendage at each end.

In alpine bogs. Rare, and occurring sparingly in its different stations. I have gathered it to the south, east, and west of the peak

of Ben Lawers, Perthshire, and in Canlochan Glen, Forfarshire, and have specimens from the Glass Maol, on the confines of Aberdeenshire and Forfarshire, and from Glen Isla, in the latter county; also from Benina, Dumbartonshire, collected by the late Mr. W. Gourlay. There is a specimen in the Smithian herbarium, said to have been collected in the county of Durham by the Rev. Mr. Harriman; but as no subsequent collector has detected it, and it is a conspicuous plant, this is scarcely sufficient evidence for considering it an English species.

[England?] Scotland. Perennial. Late Summer.

Extensively creeping, the parent plant throwing up new stems at a distance of some inches. Stems 3 to 14 inches high, with 5 or 6 leaves, the lowest of which are produced at the very base, and 2 or 3 between the base and the inflorescence. Perianth leaves $\frac{1}{6}$ inch long. Capsule $\frac{1}{3}$ inch long. Seeds with the nucleus about half as large as that of *J. trifidus*, but the testa is produced into a long sac at each end, so that the whole length of the seed is greater.

Clustered Rush.

SPECIES III.—*JUNCUS TRIGLUMIS*. *Lin.*

PLATE MDLVI.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCXCII. Fig. 865.

Subcæspitose. Rootstock without stolons. Stems few, cylindrical. Leaves few, all radical, filiform, semicylindrical, channelled at the base. Sheaths 1 to 3, with truncate auricles, the 2 uppermost with laminae like the free radical leaves. Inflorescence a single head, which is terminal or sometimes pseudo-lateral while in flower. Lowest bract scarious or subfoliaceous, even in the latter case not above twice as long as the head. Flowers 1 to 4, generally 3 in the head; when there are 3 or 4, the lowest a little way below the others. Perianth leaves narrowly elliptical, subobtusely, at first cream-colour, afterwards reddish-brown, about three-fourths of the length of the capsule. Capsule chestnut-ovoid, prismatical, abruptly acuminate, with a cylindrical beak about one-tenth the length of the capsule. Seeds rather large, with a long white appendage at each end.

In wet places and by the sides of rivulets on mountains. Not uncommon. In England it is confined to the Carnarvonshire mountains, and the Widdy Bank, Teesdale, on the Durham side of the stream; on Cronkley Fell, on the Yorkshire side of the stream, it is said to have been planted by Mr. John Binks; it also occurs in the

Lake district. On the Scotch Highlands it is common, and though absent from Orkney, it occurs in Shetland.

England, Scotland. Perennial. Late Summer.

Plant growing in small tufts, with 1 to 18 stems in each tuft. Stems 2 to 10 inches high, slender, wiry. Leaves 1 to 3 inches long, scarcely thicker than the stems. Flowers enclosed in pale chestnut bracts, of which the lowest one has sometimes a short foliaceous point, in which case it appears to be a continuation of the stem, so that the head is pseudo-lateral. Perianth leaves about $\frac{1}{5}$ inch long. Capsule about $\frac{1}{4}$ inch long, paler than that of *J. castaneus*. Seeds about two-thirds the size of those of that plant, from the apical appendages not being quite so long.

Three-flowered Rush.

French, *Jonc à trois glumes*.

SPECIES IV.—**JUNCUS BIGLUMIS.** *Lin.*

PLATE MDLVII.

Not caespitose. Rootstock with short stolons. Stems solitary, semicylindrical, with a groove on the side to which the flowers are turned. Leaves all radical, linear-subulate, slightly compressed. Sheaths 2, without auricles, the uppermost with a lamina like the free radical leaves. Inflorescence a single head, rarely with a solitary flower a little way beneath it; head or upper head pseudo-lateral. Lowest bract foliaceous, two to six times as long as the head, resembling a continuation of the stem. Flowers 1 to 3, but generally 2, the upper one shortly stalked, the lower subsessile. Perianth leaves strapshaped-elliptical, obtuse, chestnut, very little shorter than the capsule. Capsule chestnut at the apex, paler towards the base, oblong-turbinate, trigonous, deeply notched at the apex, with a small mucro not exceeding the depth of the notch. Seeds rather large, with a moderately long appendage at each end.

In wet places and by the sides of rills on micaceous rocks. Very local, and nearly restricted to the Breadalbane Mountains in Perthshire, where I have collected it on Ben Lawers, Catjachiamen, and other hills in that district. Dr. Dickie has gathered it in small quantity on rocks beside the waterfall at the head of Glen Callater, Aberdeenshire. It is also reported from Clova, Ben Nevis, Cairngorm, and the more improbable habitat of Goat Fell, in Arran.

Scotland. Perennial. Late Summer.

Stems 1 to 7 inches high. Leaves $\frac{3}{4}$ to 2 inches long, more resem-

bling those of *J. castaneus* than of *J. triglumis*. Perianth leaves $\frac{1}{2}$ inch long. Capsule only slightly exceeding the perianth, 3-sided, each side obovate. Seeds similar to those of *J. triglumis*, but shorter and with considerably smaller appendages.

Mr. Bentham joins *J. triglumis* to *J. biglumis*. Perhaps he has seen specimens of *J. triglumis* with pseudo-lateral flowers misnamed *J. biglumis*, for the two species have nothing in common but their small size, few flowers, and appendaged seeds.

Two-flowered Rush.

SECTION II.—ACUTI. *Fries.*

Perennial. Stems solid, not articulated. Leaves all radical, sheathing the base of the stem, resembling the barren stems, not jointed; the sheaths sometimes without any lamina. Flowers numerous, in small fascicles, collected into an umbellato-corymbose panicle or head, which is at first pseudo-lateral, from the lowest bract forming an apparent continuation of the stem, but in fruit it becomes more evidently terminal. Seeds with the testa produced into a short appendage at each end.

SPECIES V.—**JUNCUS ACUTUS.** *Linn.*

PLATE MDLVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCCL.

Billot, Fl. Gall. et Germ. Exsicc. No. 2944.

Cæspitose, growing in large dense circular tussocks. Rootstock very shortly creeping, its branches with the stems placed close together one before the other. Stems very numerous, wiry and rigid, terete, smooth when fresh, finely striate when dry, the barren ones much more numerous than the fertile, and terminating in a very acute pungent point. Sheaths long, chestnut, shining; a few of the upper ones terminating in a lamina which is extremely similar to the barren stems. Panicle at first pseudo-lateral, afterwards nearly terminal. Lowest bract resembling a continuation of the stem, from as long as to twice as long as the panicle, and terminating in a rigid point like the barren stems and leaves. Flowers in fascicles of 2 to 4, arranged in a rather dense umbellato-corymbose panicle, with the lower branches diverging and sometimes so short that the inflorescence forms a head. Perianth leaves oval-lanceolate, the outer ones subacute, the inner obtuse and usually emarginate from the great development of a white scarious membranous border; all of them about half the length of the capsule, yellowish brown with chestnut tips. Capsule

ovate-subglobular, scarcely trigonous, subacute and very shortly mucronate, chestnut. Seeds with a rather short appendage at each end.

In damp hollows in sandy places by the sea. Rare, and confined to the south of England, from Devon, Dorset, Sussex, and Kent, to the north coast of Norfolk, and Carnarvon: apparently most generally distributed on the Welsh coast. Very rare in Ireland, but found on the south and south-east coast.

England, Ireland. Perennial. Summer.

Stems 2 to 4 feet high, very rigid, with the pith not separable from the rind. Leaf-sheaths 2 to 6 inches long, the uppermost 1 or 2 terminating in leaves which are similar in appearance to the stems, and of the same dark dull green. Lowest branches of the panicle $\frac{3}{4}$ to 4 inches long, several times compound; ultimate branches usually with 2 flowers, with keeled acuminate and somewhat aristate bracts enveloping each pair of flowers, and extending beyond them, though scarcely exceeding the fruit. Perianth leaves about $\frac{1}{6}$ inch long, slightly keeled; the inner ones remarkable for their broad white scarious margin, which is most developed towards the apex, on each side of which it forms a rounded or truncate wing. Capsule about $\frac{1}{4}$ inch long by $\frac{1}{6}$ inch broad, rounded at the base, tapering at the apex, very hard, shining. Seeds minute, reddish-brown, with the testa produced at both ends into a sac shorter than the solid part of the seed.

Greater Sea Rush.

French, *Jonc aigu*. German, *Wald-Binse*.

SPECIES VI.—**JUNCUS MARITIMUS.** Sm.

PLATE MDLIX.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCCH.

J. acutus, var. β . *Linn. Spec. Pl. p. 464.*

Cespitose, growing in irregular tufts. Rootstock rather extensively creeping, its branches with the stems placed close together one before the other. Stems rather numerous, firm, wiry but not rigid, terete, smooth when fresh, finely striate when dry, the barren ones not much more numerous than the fertile ones, and shorter and weaker than these, terminating in a slender acute pungent point. Sheaths rather short, reddish-brown and green, scarcely shining, 1 or 2 of the uppermost ones frequently terminating in a lamina extremely similar to the barren stems. Panicle at first pseudo-lateral, ultimately but slightly so, the lowest bract resembling a continuation of the stem and from as long as to twice as long as the panicle, terminating in

a rigid point like the barren stems and leaves. Flowers in fascicles of 2 to 4, arranged in a decom-pound umbellato-corymbose panicle with the lower branches erect. Perianth leaves lanceolate, acute, olive-green, sometimes dull brown on the midrib, as long as the capsule, the inner ones without any scarious wing. Capsule elliptical-ovoid, trigonous, and gradually acuminated into a short beak, yellowish-brown, shining. Seeds with a short appendage at each end.

In salt marshes. Rather rare, but widely distributed, reaching from Cornwall, Isle of Wight, and Kent, north to Argyle, Moray, and Kincardine; but a scarce plant in Scotland. Frequent and generally distributed round the coast of Ireland.

England, Scotland, Ireland. Perennial. Late Summer, Autumn.

Stems 18 inches to 3 feet high, much more slender and less rigid than those of *J. acutus*, and the stems do not grow in great round tufts, as in that plant, by reason of the much more extensively creeping rootstock of *J. maritimus*. Lowest branches of the panicle often 4 to 6 inches long, rarely as short as 2 inches, much more erect than in *J. acutus*, and being of unequal length, the panicle is slender, and appears interrupted from the bare shaft of the lowest panicle branches commonly extending beyond the flowers of the upper ones. Perianth leaves about $\frac{1}{6}$ inch long, decidedly acute, the inner ones destitute of the white scarious wing which margins those of *J. acutus*. Capsule about $\frac{1}{6}$ inch long by $\frac{1}{12}$ inch broad, much narrower than that of *J. acutus*. Seeds similar to those of *J. acutus*, but rather smaller.

Lesser Sea Rush.

French, *Jonc maritime*. German, *Meerstrands Binse*.

This Rush is useful on the sandy shores of our sea coasts, where it is found, in binding the loose and shifting sands with its roots. The white bases of the stems are clammy, and exhale the odour of red cedar wood.

SECTION III.—LATERIFLORI. *Fries.*

Perennial. Stems filled with separable spongy white pith, not articulated. Leaves reduced to radical sheaths, which are either destitute of laminae or with rudimentary ones. Flowers few or numerous, mostly solitary, collected into an umbellato-corymbose panicle or head, which is from first to last pseudo-lateral, from the lowest bract forming an apparent continuation of the stem. Seeds with the testa not produced into a tail-like appendage.

SPECIES VII.—**JUNCUS COMMUNIS.** *L. Mo. pr.*

PLATES MDLX. MDLXI.

Cespitose, growing in circular tufts. Rootstock rather shortly creeping, its branches with the stems placed close together one before the other. Stems numerous, soft, not wiry nor rigid, rather thick, terete, smooth when fresh, finely striate when dry, green, filled with continuous pith. Sheaths leafless, reddish-brown towards the base, scarcely shining. Panicle pseudo-lateral, from the lowest bract resembling a continuation of the stem and being much longer than the panicle. Flowers numerous, solitary, arranged in a decomposed panicle, with the lower branches spreading, twice or thrice branched, but frequently so short that the inflorescence is reduced to a head. Perianth leaves equal, very narrowly lanceolate, acuminate and very acute, olive-green or light brown, a very little longer than the capsule. Stamens 3. Capsule oval-turbinate, trigonous, truncate or emarginate, with or without a minute terminal mucro, pale brown or olive. Seeds very minute, without an appendage.

SUB-SPECIES I.—**Juncus conglomeratus.** *Lin.*

PLATE MDLX. -

*Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCCVIII.**Billot, Fl. Gall. et Germ. Exsicc. No. 3479.*

Perianth leaves tinged with brown. Anthers strapshaped, nearly as long as their filaments. Capsule with a minute terminal mucro.

In wet places. Very common, and universally distributed, though less abundant in the north of Scotland.

England, Scotland, Ireland. Perennial. Summer.

Stems usually numerous, 1 to 3 feet high, readily compressible, with a thick central pith, rather dull green, but not at all glaucous. Panicle in the typical form very compact and resembling a head, but not unfrequently lax. Perianth leaves scarcely $\frac{1}{2}$ inch long, pale olive, more or less tinged with reddish-brown. Capsule nearly as long as the perianth leaves, pale brown, tinged with chestnut towards the apex, with a minute central apiculus, upon which the base of the style is placed. Seeds extremely minute, yellowish-brown.

Common Rush.

French, *Jonc aggloméré.* German, *Geknäuelte Binse.*

This species of Rush is used for the same purposes as *J. effusus*, and the pith inside the stem is employed for wicks to small candles, called rushlights. The Rev. Gilbert

White, who wrote the "History of Selborne," mentions that the poor of his neighbourhood in Hampshire were in the habit of using these lights, which they made themselves, by dipping the rushes into tallow. He says, "Decayed labourers, women, and children gather these rushes late in the summer: as soon as they are cut, they must be flung into the water, and kept there, otherwise they will dry and shrink, and the peel will not run. When peeled, they must lie on the grass to be bleached, and take the dew for some nights, after which they are dried in the sun. Some skill is required in dipping these rushes into the scalding fat or grease. The careful wife of an industrious Hampshire labourer gets all her fat for nothing; for she saves the skimmings of her bacon-pot for this use; and if the grease abound with salt, she causes the salt to precipitate to the bottom by settling the skimmings in a warm oven. Where hogs are not much in use, and especially by the sea-side, the coarse animal oils will come very cheap. A pound of common grease may be procured for fourpence, and about six pounds of grease will dip a pound of rushes, which cost one shilling, so that a pound of rushes ready for burning will cost three shillings. If men that keep bees will mix a little wax with the grease, it will give it a consistency, render it more cleanly, and make the rushes burn longer. Mutton suet will have the same effect." An experienced old housekeeper assured Mr. White that one pound and a half of rushes completely supplied her family the year round, since working people burn no candle in the long days, because they rise and go to bed by daylight.

SUB-SPECIES II.—*Juncus effusus*. Linn.

PLATE MDLXI.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCCXIII

Billot, Fl. Gall. et Germ. Exsicc. No. 2750.

Perianth leaves pale olive, rarely tinged with brown. Anthers oval, about half as long as their filaments. Capsule without any terminal mucro. Panicle usually, but not always, more lax than in *J. conglomeratus*, and the stem usually smoother, softer and paler green.

In wet places. Very common, and generally distributed in the north, more abundant than *J. conglomeratus*.

England, Scotland, Ireland. Perennial. Late Summer.

Similar to *J. conglomeratus*, but the stems are paler green, and usually thicker than in that plant. The perianth segments are less tinged with reddish-brown. The capsule is rather smaller and usually olive, and when the base of the style is rubbed off, the apex of the capsule has a depression and not a small protuberance in the centre. When growing together, the capsules appear later in ripening, but the two are so closely allied, that though they may be distinguished readily enough when growing, they can scarcely be separated when dry, if not in fruit, as both species vary with compact or lax panicles, although those of *J. effusus* are more commonly lax than those of *J. conglomeratus*.

Soft Rush.

French, *Jonc épars*. German, *Flatterige Binse*.

Though the Rush has become a proverbial type of worthlessness, some of the plants we know are far from being as useless as popular sayings would infer. In ages long before the luxury of carpets was known in England, the floors of houses were covered with a much more homely material. When William the Conqueror invested his favourites with some of the Aylesbury lands, it was under the tenure of providing "straw for his bedchamber; three eels for his use in winter, and in summer straw rushes; and two green geese thrice every year." In the household roll of Edward II. we find an entry of money paid to John de Carleford for going from York to Newcastle to procure straw for the King's chamber. Froissart, relating the death of Gaston Count de Foix, says that the Count went to his chamber, which he found strewed with rushes and green leaves, and the walls were hung with boughs newly cut for perfume and coolness, as the weather was marvellously hot. Adam Davie Marshall, of Stratford-le-Bow, who wrote about the year 1312, in his poem of the "Life of Alexander," describing the marriage of Cleopatra, says:—

"There was many a blithe grome
Of olive and of ruge flowers,
Werein y strewed halls and bowres,
With samytes and bandekyns,
Werein curtayned the gardyns."

This custom of strewing the "halle and bowres" was continued to a much later period. Hentzner in his "Itinerary," says of Queen Elizabeth's presence-chamber at Greenwich, "The floor, after the English fashion, was strewed with *hay*," meaning rushes. If, however, we may trust to an epistle, wherein the learned Erasmus gives an account of this practice to his friend Dr. Francis, physician to Cardinal Wolsey, it would appear that from the rushes being seldom thoroughly changed, and from the habits of those days, which were not very cleanly, the smell soon became anything but pleasant. He speaks of the lowest layer of rushes (the top only being renewed) as remaining unchanged for twenty years, a receptacle for beer, grease, fragments of victuals, and other organic matters. To this filthiness he ascribes the frequent pestilences with which at that period the people were afflicted; and Erasmus recommends the entire banishment of rushes, and the adoption of better means of ventilation, the sanitary importance of which was thus, we see, perceived more than two centuries ago.

When Henry III., King of France, demanded of Monsieur Dundelot what especial things he had noticed in England during the time of his negotiation there, he answered, that he had seen but three things remarkable, which were, "that the people did drinke in bootes, ate rawe fish, and strewed all their best rooms with *hay*;" meaning, black-jacks, oysters, and rushes.

The English stage was strewed with rushes in Shakespeare's time, and the Globe Theatre was roofed with rushes; and it was through these rushes taking fire that the theatre was burnt down. To the rushes for a stage covering succeeded matting; then for tragedy came black hangings; after which the green cloth still used, as Goldsmith humorously observes, "spread for bloody work." The strewing of rushes in the way by which processions were to pass, is attributed by our poets to almost all times and countries. Thus, at the coronation of Henry V., when the procession is coming, grooms cry, "More rushes, more rushes!" (*Henry IV.* Part II. Act V. Scene 5.)

Thus also at a wedding—

“Full many maids, clad in their best array,
In honour of the bride, come with their flasks
Fill'd full with flowers; others in wicker baskets
Bring from the marish rushes to o'erspread
The ground, whereon to church the lovers tread.”

Browne's *Brit. Past.* i. 2.

They were used green:—

“Where is this stranger? Rushes, ladies, rushes!
Rushes as green as summer for this stranger.”

Beaumont and Fletcher's *Valentinian*.

We find the Rush used in Devonshire as a charm for the thrush, as follows:—
“Take three rushes from any running stream, and pass them separately through the mouth of the infant; then plunge the rushes again into the stream, and as the current bears them away, so will the thrush depart from the child.”

In many old parish accounts we find records of provision for rushes or straw wherewith to strew the churches, according to the season of the year. Brand quotes from the churchwardens' accounts of St. Mary-at-Hill, London, in 1504: “Paid for two Berden Rysshes for the strewing the newe pews, 3*d*.” 1493: For three Berdens of rushes for ye new pews, 3*d*.”

The Rev. G. Miles Cooper, in his paper on the Abbey of Bayham, in the “Sussex Archaeological Collections, 1857,” observes: “Though few are ignorant of this ancient custom, it may not be so generally known that the strewing of churches grew into a religious festival, dressed up in all that picturesque circumstance wherewith the old Church well knew how to array its ritual. Remains of it linger to this day in remote parts of England. In Westmoreland, Lancashire, and districts of Yorkshire, there is still celebrated, between haymaking and harvest, a village fête called the Rushbearing. Young women dressed in white, and carrying garlands of flowers and rushes, walk in procession to the parish church, accompanied by a crowd of rusties with flags flying and music playing. There they suspend their floral chaplets on the chancel-rails, and the day is concluded with a simple feast. The neighbourhood of Ambleside was until lately, and may be still, one of the chief strongholds of this popular practice, respecting which I will only add as a curious fact, that up to the passing of the recent Municipal Reform Act, the town clerk of Norwich was accustomed to pay to the subsacrist of the cathedral an annual guinea for strewing the floor of the cathedral with rushes on the Mayor's day, from the western door to the entrance into the choir. This is the most recent instance of the ancient usage that has come to my knowledge.” In Cheshire, at Runcorn, at Warburton, the annual Rushbearing wake is carried out in grand style. A large quantity of rushes, sometimes a cartload, is collected, and being bound on the cart, are cut evenly at each end, and on Saturday evening a number of men sit on the top of the rushes, bearing garlands of artificial flowers, tinsel, and such things. The cart is drawn round the parish by three or four spirited horses, decked with bells and ribbons. It is attended by morris dancers, fantastically dressed; there are men in women's clothes, one of whom, with his face blackened, has a belt, with a large bell attached, round his waist, and he carries a ladle to collect money. The party stop and dance at the public-house on their way to the church, where the rushes are deposited, and the garlands are hung up to serve for the next year.

At the present day rushes are used for making mats and the bottoms of common chairs; small baskets are also plaited with them by children in country places; and curious and pretty little ornaments are often constructed from the pith inside the Rush.

SPECIES (?) VIII.—**JUNCUS DIFFUSUS.** *Hoppe.*

PLATE MDLXII.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCCXIV.

Billot. Fl. Gall. et Germ. Exsicc. No. 2718.

J. effuso-glaucus, Schnitzl. & Frickh. Gütke, Fl. von Nord und Mittel Deutsch. ed. vi. p. 404.

J. glaucus, var. β, diffusus. Hook. & Arn. Brit. Fl. ed. viii. p. 461

Caespitose, growing in roundish tufts. Rootstock rather shortly creeping, its branches with the stems placed close together one before the other. Stems numerous, soft, not wiry nor rigid, rather slender, terete, smooth when fresh, finely striate when dry, green, filled with continuous pith. Sheaths leafless, dark purplish-brown towards the base, shining. Panicle pseudo-lateral, from the lowest bract resembling a continuation of the stem and being much longer than the panicle. Flowers numerous, solitary, arranged in a decompound panicle, with the lower branches twice or thrice branched, ascending-erect, elongate. Perianth leaves equal, very narrowly lanceolate, acuminate and very acute, yellowish-brown, longer than the capsule. Stamens 6. Capsule oblong-turbinate, shortly acuminate into a short mucro, pale chestnut, trigonous. Seeds abortive.

In damp pastures. Rather rare, but occurring sparingly throughout England. Although this plant was first reputed British on the faith of specimens said to be sent from Kincardineshire, there is no reliable record of its occurrence in Scotland. In Ireland it is reported from Ballyronan, co. Derry.

England, [Scotland?], Ireland. Perennial. Early Summer.

Very similar to *J. effusus*, but with the stems thinner and with much darker sheaths; the branches of the panicle much less spreading, the stamens (always?) 6; the anthers much longer, and the capsule shortly acuminate, varying from half as long as the perianth leaves to rather more than three-quarters of their length, and considerably darker in colour. From *J. glaucus*, which it resembles in general appearance, it differs in the stems not being glaucous, nor striate, nor wiry and tough, the pith not interrupted, the style shorter, the capsule not narrowed from about the middle but abruptly acuminate, and considerably shorter in proportion to the perianth leaves, and paler in colour.

I am strongly inclined to agree with those botanists who consider *J. diffusus* a hybrid between *J. glaucus* and *J. effusus*; but Mr. H. C. Watson, who has cultivated *J. diffusus*, considers it a "sterile variety of *J. effusus*, and that it has no affinity to *J. glaucus* either as a hybrid or variety of the latter." Mr. H. C. Watson, in adverting to the opinion of Dr. Bromfield that *J. diffusus* was a hybrid between *J. glaucus* and *J. effusus*, considers that there are no sufficient grounds to warrant this inference.

Diffuse Rush.

French, *Jonc diffus*.

SPECIES IX.—**JUNCUS GLAUCUS.** *Silbh.*

PLATE MDLXIII.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCCXV.

Billot, Fl. Gall. et Germ. Exsicc. No. 2144.

J. glaucus, var. *a*, Ehrharti. *Hook. & Arn.* Brit. Fl. ed. viii. p. 461.

Cespitose, growing in circular tufts. Rootstock rather shortly creeping, its branches with the stems placed close together one before the other. Stems numerous, wiry, rather rigid, very tough, rather slender, terete, deeply striate, especially when dry, glaucous, filled with interrupted pith. Sheaths leafless, indistinctly striate, dark purplish-brown towards the base, shining. Panicle pseudo-lateral, from the lowest bract resembling a continuation of the stem, and being much longer than the panicle. Flowers numerous, solitary, arranged in a decom-pound umbellato-corymbose panicle, with the lower branches erect, elongate (more rarely rather short), twice (rarely thrice or once) branched. Perianth leaves equal, very narrowly lanceolate, acuminate and very acute, brown, about as long as the capsule. Stamens 6. Capsule oval-ovoid, trigonous, rather gradually acuminate into a short mucro, dark chestnut. Seeds minute, without an appendage.

In damp places and roadsides on poor soil. Common, and generally distributed in England. Less frequent in Scotland, and absent from the north of that country. Frequent in Ireland, near the sea, but by no means generally distributed in that island.

England, Scotland, Ireland. Perennial. Late Summer.

Stem 9 inches to 2 feet high, much tougher and more rigid than those of *J. communis* and *J. diffusus*, and more slender in proportion to their length than in the former. Branches of the panicle much more erect than in *J. communis*, scarcely diverging. Capsule sometimes a little longer than the perianth leaves, sometimes a little shorter, broadest

about the middle. Seeds a little longer and considerably broader than those of *J. communis*, and of a darker brown.

Hard Rush.

French, *Jonc glauque*. German, *Meergrüne Binse*.

In France, Mr. W. Robinson, in his instructive work, "The Parks, Promenades, and Gardens of Paris," informs us that in France it is extensively used in tying up plants as a substitute for bass.

SPECIES X.—**JUNCUS BALTICUS.** *Willd.*

PLATE MDLXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCCXI.

J. glaucus, β littoralis, Wahl. Fl. Suec. Vol. I. p. 209.

J. arcticus, Hook. Sm. Eng. Fl. Vol. II. p. 163 (non Willd.).

Not caespitose. Rootstock very extensively creeping, its branches with the stems placed widely apart, one before the other. Stems few, wiry, tough, rather slender, thin, terete, nearly smooth when fresh, finely striate when dry, deep green, filled with continuous pith. Sheaths leafless, or some of them with a very short setaceous-subulate lamina, deeply striate, yellowish, the basal one fuscous, slightly shining. Panicle pseudo-lateral, from the lowest bract resembling a continuation of the stem, and being much longer than the panicle. Flowers few, solitary, arranged in a slightly compound umbellato-corymbose panicle, with the lower branches erect, rather short, once (rarely twice) branched, sometimes so short that the inflorescence forms a head. Perianth leaves chestnut, with a pale midrib, nearly equal, lanceolate, acute, as long as or a little longer than the capsule. Stamens 6. Capsule oval-ovoid, indistinctly trigonous, subobtuse, very abruptly acuminate into a short mucro, dark chestnut. Seeds rather minute, without an appendage.

In sandy places near the sea, or rarely by inland lakes. Rare, and confined to the north of Scotland, where it occurs on the coast of Forfar, Aberdeen, Banff, Moray, Ross, Sutherland, and that of the Hebrides; also on the south side of the Loch of Park or Drum, Kincardineshire, ten or twelve miles from the sea.

Scotland. Perennial. Late Summer.

Stem 6 to 18 inches high, produced at intervals along the extensively creeping rootstock. Lowest panicle branches rarely more than 1 inch long, and often not above $\frac{1}{4}$ inch. Perianth leaves about $\frac{1}{2}$ inch long, each flower enveloped at the base by two ovate bracts, much paler than the perianth leaves. Capsule broader and blunter

than that of *J. glaucus*, with which, notwithstanding Wahlenberg's opinion, it has but little affinity.

Northern Rush.

French, *Jonc arctique.* German, *Baltische Binse.*

SPECIES XI.—**JUNCUS FILIFORMIS.** *Lin.*

PLATE MDLXV.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCCXII. Fig. 919.

Billot, Fl. Gall. et Germ. Exsicc. No. 672.

Subcaespitose. Rootstock extensively creeping, its branches with the stems placed about their own breadth apart one before the other. Stems rather few, wiry, tough, very slender, terete, smooth when fresh, finely striate when dry, green, filled with greatly interrupted pith. Sheaths leafless, or some of them terminated by a very short setaceous lamina, striate, yellowish-brown, not shining. Panicle pseudolateral, from the lowest bract resembling a continuation of the stem, and being commonly about as long as the stem. Flowers few, solitary, arranged in a nearly simple corymbose panicle, with the lower branches erect, very short, simple, or very rarely once branched, generally so short that the flowers are in a head. Perianth leaves pale olive-brown, slightly unequal, the three inner ones shorter, all lanceolate, acute, as long as or a little longer than the capsule. Stamens 6. Capsule roundish-turbinate, very obtuse, mucronate, pale brown. Seeds very minute, without an appendage.

On the gravelly shores of lakes. Very local. On the shores of Windermere, Westmoreland; and Thirlmere, Crummock Lake, and Derwentwater, Cumberland. In Scotland it is known to occur only on the margin of Loirston Loch, Kincardineshire, three miles south of Aberdeen.

England, Scotland. Perennial. Late Summer.

Rootstock extensively creeping, somewhat woody, thick for the size of the plant. Stems very slender, 2 to 9 inches high, with the lowest bract about as long, so that the flowers appear to be about the middle of the stem; pith reduced to filmy dissepiments much more than their own width apart. Perianth leaves $\frac{1}{6}$ inch long, pale greenish-olive, with rather short lanceolate bracts at the base of the same colour. Seeds very minute, yellowish-brown.

I am indebted to Mr. A. G. More for fresh specimens of this species from Kincardineshire.

Thread Rush.

French, *Jonc filiforme.* German, *Fadenförmige Binse.*

SECTION IV.—ARTICULATI. *Fries.*

Perennial. Stems hollow, at least in the upper part, articulated. Leaves distributed over the stem, and in separate radical barren tufts, subcylindrical, fistulose with solid dissepiments, which give a jointed appearance to the dried leaves; radical leaves reduced to sheaths, or similar to the stem leaves, or setaceous and channelled above, and without dissepiments. Flowers numerous or several, in small fascicles collected into an umbellato-corymbose panicle. Seeds with the testa not produced into a tail-like appendage.

SPECIES XII.—**JUNCUS OBTUSIFLORUS.** *Ehrh.*

PLATE MDLXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCCIV.

Billot, Fl. Gall. et Germ. Exsicc. No. 2945.

Not cæspitose. Rootstock extensively creeping, its branches elongate, with the stems more or less widely apart one before the other. Stems erect, terete, smooth when fresh, scarcely striate when dry, solid towards the base, hollow with distinct dissepiments above. Radical sheaths yellow, leafless, the uppermost one with a filiform lamina. Stem leaves usually 2, sheathing, their laminae cylindrical-terete, hollow with numerous partitions, which give the dried leaf the appearance of being jointed; middle leaf nearly as long as the stem. Flowers numerous, in fascicles of 3 to 8, arranged in a decom pound umbellato-corymbose panicle, of which the lower branches are much longer than the foliaceous bract, ascending, twice or thrice branched, the ultimate branches divaricate. Perianth leaves nearly equal, oblong, obtuse, very pale green or tinged with pale reddish-brown, a little shorter than the capsules. Stamens 6; filaments shorter than the anthers. Style* as long as the ovary. Capsule oval-ovoid, gradually acuminate into a short mucro, pale reddish-brown, shining. Seeds very minute, with the testa not produced into an appendage.

In ditches and wet places. Rather rare. Sparingly distributed over England. Very scarce in Scotland: reported on good authority from Kirkecudbright, Wigton, Haddington, and Linlithgow; but I have never seen a Scottish specimen. Very rare in Ireland, where it has occurred in co. Cork, co. Wicklow, and co. Down.

* In this and the following species the term "style" is restricted to the undivided part.

England, Scotland, Ireland. Perennial. Late Summer, Autumn.

Rootstock rather thick, extensively creeping, producing numerous stems about their own width apart one before the other. Stems $1\frac{1}{2}$ to 4 feet high, with several sheaths at the base, the uppermost of which is terminated by a lamina usually about $\frac{1}{4}$ inch long, but sometimes 1 inch or more; about the middle of the stem there is a sheathing leaf, with a lamina reaching nearly up to the panicle, and above this there is usually a second much shorter leaf. Lowest branches of the panicle 2 to 6 inches long, the ultimate branches at first ascending, but afterwards spreading at right angles to the branch from which they spring. Perianth segments about $\frac{1}{8}$ inch long, channelled, with pale bracts at the base and broad scarious margins. Seeds yellowish.

Blunt-flowered Rush.

French, *Jonc à fleurs obtuses.* German, *Stumpfblüthige Binse.*

SPECIES XIII.—**JUNCUS ACUTIFLORUS.** Ehrh.

PLATE MDLXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCCDL.

J. sylvaticus, Reichard. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 842. Gren. & Godr.

Fl. de Fr. Vol. III. p. 347. Parl. Fl. Ital. Vol. II. p. 336. (Non Huds.)

J. articulatus, Linn. Sm. Engl. Bot. No. 238.

Not cæspitose. Rootstock rather extensively creeping, its branches producing at intervals tufts of stems close together or slightly separated one before the other. Stems erect, slightly compressed, nearly smooth when fresh, faintly striate when dry, solid towards the base, hollow with distinct dissepiments above. Radical sheaths yellowish-brown, leafless, the upper one with a very short filiform lamina. Stem leaves usually 3 or 4, sheathing, their laminae terete-compressed, hollow with numerous partitions, which give the dried leaf the appearance of being jointed; all of them shorter than the stem. Flowers numerous, in fascicles of 4 to 12, arranged in a compound umbellato-corymbose panicle, of which the lowest branches are commonly longer than the foliaceous bract, erect-ascending, once or twice (rarely thrice) branched, the ultimate branches ascending or spreading-ascending. Perianth leaves unequal, the inner ones longest, all narrowly lanceolate, acuminate, and very acute, slightly recurved at the tips, and subaristate, pale olive-brown or dark reddish-brown towards the apex, usually a little shorter than the capsule. Stamens 6; filaments shorter than the anthers. Style longer than the ovary. Capsule lanceolate-ovoid, triquetrous, very gradually acuminate into a beak, pale reddish-brown, shining. Seeds very minute, with the testa not produced into an appendage.

Var. *α*, *genuinus*.

Flowers in fascicles of 4 to 8. Perianth leaves pale olive-brown, shorter than the capsule.

Var. *β*, *macrocephalus*. Koch.

"*J. brevirostris*, Nees, Comp. Fl. Germ. ed. i. p. 881." (Test. Koch.)

Flowers in fascicles of 6 to 12. Perianth leaves dark brown, as long as the capsule. Flowers larger than in var. *α*.

In ditches, wet meadows, and boggy heaths. Common, and generally distributed, extending north to Orkney and Shetland.

Var. *β* apparently rare. Kingcausie, Kincardineshire.

England, Scotland, Ireland. Perennial. Summer, Autumn.

Stems 1 to 2 feet high or more but never so tall as in *J. obtusiflorus*, from which it differs also in the stems and leaves being slightly compressed, the stem leaves usually 3 and shorter, the panicle less compound and with shorter branches, the longest branches rarely more than 2 or 3 inches, and its ultimate branches not spreading at right angles. Perianth leaves nearly $\frac{1}{6}$ inch long, very acute, usually brown, especially when in fruit. Capsule narrower, more gradually acuminate and darker coloured than in *J. obtusiflorus*, and so gradually acuminate that it is beaked rather than mucronate. Seeds similar to those of *J. obtusiflorus*, but a little longer.

Sharp-flowered Rush.

French, *Jonc à fleurs aiguës*. German, *Waldbinse*.

SPECIES XIV.—**JUNCUS LAMPROCARPUS.*** Ehrh.

PLATES MDLXVIII. MDLXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCCV.

Billot, Fl. Gall. et Germ. Exsicc. No. 2145.

Subcæspitose. Rootstock shortly creeping, its branches producing stems close together. Stems ascending, slightly compressed, smooth when fresh, faintly striate when dry, solid at the base, hollow with distinct dissepiments above. Radical sheaths pale, all except the lowest with an elongate lamina like that of the stem leaves. Stem leaves 2 to 4, sheathing, their lamina terete and more or less compressed, hollow with numerous partitions, which give the dried leaf the appearance of being jointed, all of them much shorter than the

* Frequently written "*lampocarpus*," from a clerical error in the original authority.

stem. Flowers numerous, or rather few, in fascicles of 2 to 10, arranged in a compound or nearly simple umbellato-corymbose panicle, of which the lowest branches are commonly longer than the foliaceous bract, ascending, once (more rarely twice) branched or simple, the ultimate branches ascending or spreading-ascending. Perianth leaves nearly equal, the outer ones acute but not recurved at the tips, the inner ones varying from obtuse to acute, and with broad pale scarious margins, all of them chestnut-brown, shorter than the capsule. Stamens 6; filaments about as long as the anthers. Style shorter than the ovary. Capsule lanceolate-ovoid triquetrous, gradually attenuated to the apex, and shortly mucronate, dark brown, very glossy. Seeds very minute, with the testa not produced into an appendage.

Var. α , *genuinus*.

PLATE MDLXVIII.

J. lamprocarpus, *D. Don*; *Bab. Man. Brit. Bot. ed. vi. p. 352*.

Leaves compressed. Heads usually numerous. Lower branches of the panicle usually once or twice branched. Inner perianth leaves decidedly obtuse or subacute.

Var. β , *nigritellus*.

PLATE MDLXIX.

J. nigritellus, *D. Don*, in *Eng. Bot. Suppl. No. 2643. Bab. Man. Brit. Bot. ed. vi. p. 352*.

J. polycephalus, *Hook. Sm. Engl. Fl. Vol. II. p. 117 (non Mich.)*.

Leaves terete. Panicle branches nearly simple. Inner perianth leaves acute. Capsule more abruptly pointed and darker in colour than in var. α .

In wet places. Common and generally distributed. Var. β , Clova Mountains, Forfarshire, Mr. G. Don.

England, Scotland, Ireland. Perennial. Late Summer, Autumn.

Stems 6 to 18 inches high, usually growing in tufts, sometimes decumbent and floating, less erect and with more numerous leaves than those of *J. acutiflorus*, as usually all the basal sheaths except the lowest are furnished with a lamina, though this in all the leaves is shorter than in the last species. Panicle usually less compound, lowest branches 1 to 4 inches long. Perianth leaves $\frac{1}{8}$ inch long, darker in colour, the outer ones less acuminate, and the inner with a broad scarious margin, which is often so much developed on each side that the perianth leaf becomes quite obtuse, but frequently it is acute, though less so than the outer ones. Capsule always longer in

proportion than that of *J. acutiflorus*, much darker in colour and more glossy, and with a more decided though short mucro at the apex. Seeds very similar to those of *J. acutiflorus*.

Of var. β I know nothing except by information derived from D. Don's account of the plant in the Supplement to "English Botany." The only character which can be relied on to separate it from var. α is that of the leaves not being compressed. In the Highlands and in Orkney I have met with *J. lamprocarpus* with the inner perianth leaves varying from quite obtuse to quite acute, but in all these cases the leaves were decidedly compressed. The number of the flowers in the fascicles, and the number of heads, is too variable to be considered of the slightest importance.

Shiny-fruited Rush.

French, *Jonc à fruits lustrés.* German, *Gegliederte Binse.*

SPECIES XV.—**JUNCUS SUPINUS.** *Mönch.*

PLATE MDLXX.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCXCVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 177.

J. uliginosus, *Sibth.* *Hook. & Arn.* Brit. Fl. ed. viii. p. 463.

Cæspitose. Rootstock short, only occasionally creeping, producing stems close together. Stems ascending, filiform, erect or ascending or floating, smooth when fresh, faintly striate when dry. Radical sheaths pale, terminating in an elongate filiform or setaceous lamina, which is channelled above. Stem leaves 1, 2, or none, filiform-cylindrical, hollow with distant dissepiments, which, however, do not always give the dried leaf a jointed appearance, all of them much shorter than the stem. Flowers few, in fascicles of 2 to 12, arranged in a nearly simple umbellato-corymbose panicle, of which the lower branches are much longer than the short foliaceous bract, ascending, simple or once branched, in which case there is often only a single branch developed, ultimate branches ascending or erect, more rarely spreading. Perianth leaves nearly equal, the outer ones acute, the inner subobtuse, with narrow pale scarious margins, all of them chestnut-brown, rather shorter than the capsule or only equalling it. Stamens 3 (rarely 6); filaments about as long as the anther. Style much shorter than the ovary. Capsule oblong-ovoid, obtusely trigonous, obtuse, with a short abrupt mucro at the apex, chestnut-brown, slightly shining. Seeds very minute, with the testa not produced into an appendage.

Var. α , *uliginosus*.

PLATE MDLXX.

J. uliginosus, *Sibth.* Sm. Engl. Bot. No. 801; Engl. Fl. Vol. II. p. 169.

Stem short, erect, often swollen at the base. Stamens usually 3; filaments as long as the anthers.

Var. β , *subverticillatus*.*J. subverticillatus*, *Wulf.* Sm. Engl. Fl. Vol. II. p. 170.

Stems elongate, decumbent or floating. Stamens usually 3; filaments as long as the anthers.

Var. γ , *Kochii*. Bab.*J. nigritellus*, *Koch*, Syn. Fl. Germ. et Helv. ed. i. (non *D. Don*).

Stamens 6; "filaments nearly twice as long as the elliptical anthers" (*Bab.*). Capsule shorter than in vars. α and β , impressed at the apex.

In bogs and wet heaths. Common, and generally distributed.

England, Scotland, Ireland. Perennial. Late Summer, Autumn.

Stems 2 to 8 inches high, or in var. β sometimes nearly a foot long, very slender, solitary or more usually several or numerous in each tuft. Radical leaves channelled, showing no articulations when dried, which, however, are usually more or less apparent in the stem leaves. Panicle with very few branches, the lowest ones 1 to 3 inches long. Perianth leaves about $\frac{1}{6}$ inch long, some of the flowers often viviparous.

Vars. α and β pass insensibly into each other, and are rather states than true varieties. The larger forms resemble *J. lamprocarpus*, but may always be distinguished by the setaceous channelled radical leaves and by the pale brown capsule scarcely exceeding the perianth leaves and much blunter at the apex.

*Lesser-jointed Rush.*French, *Jonc sétacé*. German, *Sumpfbirse*.

SECTION V.—PYGMÆI.

Annual. Stems very slender, articulated when leafy, leafless, or with 1 or 2 setaceous or channelled leaves, which have transverse partitions often projecting and giving a jointed appearance to the dried leaf. Radical sheaths with setaceous channelled leaves, which do not appear jointed when dry. Flowers fasciated and arranged in a single head, or rarely with 1 or 2 branches of the panicle developed

and terminated by heads, or solitary or in fascicles of 2 or 3 arranged in an umbellato-corymbose panicle which has the ultimate branches sometimes racemose.

SPECIES XVI.—**JUNCUS CAPITATUS.** *Weigel.*

PLATE MDLXXI.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCXCI. Fig. 862.

Billot. Fl. Gall. et Germ. Exsicc. No. 470.

J. ericetorum, *Poll.* D.C. Fl. Fr. Vol. III. p. 164.

Annual, without any rootstock. Stems solitary or several, setaceous, furrowed, leafless, except at the base; sheaths short brown, terminating in a setaceous channelled lamina, which does not appear jointed when dry. Flowers 2 to 8, collected into a head, rarely with a second head at the extremity of a branch rising from the base of the primary head. Lowest bract about twice as long as the head. Perianth leaves slightly unequal, the outer ones longer than the others, lanceolate, acuminate-aristate, recurved at the tips; the inner ones acute; all of them pale brown, twice as long as the capsule. Stamens 3; filaments longer than the anthers. Style shorter than the ovary. Capsule subglobular-ovoid, trigonous, pale reddish-brown, obtuse, mucronate. Seeds excessively minute; testa not produced into an appendage.

In sandy places inundated in winter. Very rare. L'Ancrese Common and Port de Fer, Guernsey; the Quenvais and slopes of the hills beyond St. Brélade's Bay, Jersey.

Channel Islands. Annual. Summer.

Stems erect, $\frac{3}{4}$ to 6 inches high. Leaves much shorter than the stem. Perianth leaves $\frac{1}{8}$ inch long, the outer ones the longest, and produced into a bristle-shaped slightly recurved point. Seeds extremely minute, pale reddish-brown.

Of this species I have not had an opportunity of examining fresh specimens.

Capitate Rush.

French, *Jonc en tête.* German, *Kopfblüthige Binse.*

SPECIES XVII.—**JUNCUS BUFONIUS.** *Lin.*

PLATES MDLXXII. MDLXXIII.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCXCV.

Billot. Fl. Gall. et Germ. Exsicc. No. 83.

Annual, without any rootstock. Stems few or solitary, but generally

appearing numerous from the seeds germinating close together, setaceous or slender, erect or ascending, with 1 (rarely 2) leaves, articulated; sheaths short, pale, terminating in a setaceous channelled lamina. Stem leaves shortly sheathing, with a lamina similar to that of the root leaves. Flowers solitary or in fascicles of 2 to 4, arranged in an umbellatocorymbose panicle, and frequently also a few on a simple or dichotomously branched peduncle from the axil of the stem leaf; branches of the panicle usually elongate, longer than the leaflike bracts at the base of the panicle; the branches, or at least the ultimate ones, with the flowers or fascicles racemously arranged. Perianth leaves lanceolate, very unequal, the outer ones strapshaped-lanceolate, acuminate and very acute; the inner ones acute or subacute; all green or olive, with pale scarious margins one-fourth to one-eighth longer than the capsule or rarely only as long. Capsule oblong, trigonous, obtuse, apiculate, fulvous-olive or chestnut. Seeds minute, with the testa not produced into an appendage.

Var. α , *genuinus*

PLATE MDLXXII.

R. bufonius. *Bor. Fl. du Centre de la Fr.* ed. iii. Vol. II. p. 607.

Flowers solitary. Perianth longer than the capsule.

Var. β , *fasciculatus*. Koch.

PLATE MDLXXIII.

J. fasciculatus. *Bert. Fl. Ital.* Vol. IV. p. 190. (Non *Schousb.*)

J. hybridus. *Brot. Fl. Lusit.* Vol. I. p. 513.

Flowers in fascicles of 2 or 3. Stem shorter and stouter, and with the panicle branches more divaricate than in var. α . Perianth longer than the capsule.

Var. (?) γ , *ranarius*.

J. ranarius. *Sougeon & Perrier*, in *Billot*, *Annot. Fl. Fr. et d'All.* p. 192.

Flowers solitary or rarely in fascicles of 2 or 3. Perianth leaves equalling or a little shorter than the capsule.

In damp sandy places. Common and generally distributed. Var. β in sandy places overflowed in winter. Var. γ occasionally with the other forms.

England, Scotland, Ireland. Annual. Late Summer, Autumn.

A slender plant, with the stems $\frac{1}{2}$ to 6 inches high, generally shorter than the branches of the panicle. Leaves setaceous, all channelled,

not articulated. Stems setaceous, with several long bracts resembling the leaves at the base of the panicle, but usually shorter than the longest branches, though sometimes equalling or even exceeding them. In var. α the flowers are solitary along the lower branches of the panicle, which are 1 to 6 inches long: this racemose appearance is produced by there being commonly only one branch of the cyme developed. Occasionally both branches are developed, and then the flowers are situated in the forks of the branches and at their extremity. Perianth leaves in var. α about $\frac{1}{4}$ inch long, green with a whitish midrib.

Var. β has a very different habit: the stems being commonly much shorter than the branches of the panicle, which are stiffer and much more spreading. The perianth segments are rarely above $\frac{1}{6}$ inch long and more olive. The capsule is much darker brown. This form is connected with var. α by a complete series of intermediate forms.

Var. γ scarcely deserves to be ranked as a variety, the relative length of the capsule and perianth segments being variable both in var. α and var. β .

Toad Rush.

French, *Jonc des terres argileuses*. German, *Krötenbinse*.

SECTION VI.—SQUARROSI. *Fries*, ex parte.

Perennial. Stems rather slender, hollow or solid, not articulated, leafy throughout or with the leaves all radical. Leaves narrowly linear, channelled, not appearing jointed when dry. Flowers solitary or in lax cymose fascicles arranged in an umbellato-corymbose panicle with cymose branches.

SPECIES XVII.—**JUNCUS BULBOSUS.** *Lin.*

PLATES MDLXXIV. MDLXXV.

Not caespitose, or subcaespitose. Rootstock extensively creeping. Stems slender, more or less compressed, hollow, with 1 or 2 leaves; basal sheaths pale, 1 or 2 of them with a lamina similar to that of the stem leaves. Leaves all very narrowly linear, channelled above, not appearing jointed when dry. Flowers solitary or in lax fascicles of 2 to 4, arranged in an umbellato-corymbose panicle, with the lower branches once or twice branched, erect, longer or shorter than the lowest bract; ultimate branches very short, spreading-erect, or slightly recurved. Perianth leaves nearly equal, oblong, obtuse, with pale brown scarious margins; equalling the capsule or shorter than it. Stamens 6, shorter than the anthers. Style about as long as or shorter than the ovary. Capsule oval-subglobose, obtuse or shortly

acuminate, chocolate or chestnut. Seeds minute; the testa not produced into an appendage.

SUB-SPECIES I.—**Juncus Gerardi.** *Lois.*

PLATE MDLXXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCXCVIII. Figs. 888, 889.

Billot. Fl. Gall. et Germ. Exsicc. No. 2146.

J. canosus. *Bick.* Engl. Bot. Sup. No. 2680, *Sm.* Engl. Fl. Vol. II. p. 166.

J. Bothnicus, *Wahl.* *Parl.* Fl. Ital. Vol. II. p. 350.

J. compressus, var. β . *Hook. & Arn.* Brit. Fl. ed. viii. p. 464.

Rootstock very extensively creeping, its branches with the stems more or less separate, one before the other. Stems scarcely compressed, but somewhat trigonous in the upper half. Capsule broadly oval-ovoid, shortly acuminate, mucronate, equalling or but slightly exceeding the perianth leaves. Style usually as long as the ovary.

In salt marshes and on sea-shores and by the banks of tidal rivers. Common and generally distributed.

England, Scotland, Ireland. Perennial. Summer, Autumn.

Stems very variable in height, varying from 2 inches to 2 feet or more. Leaves shorter than the stem, very narrow, firm, deep green, slightly shining. Lowest bract leaflike, commonly shorter than the panicle branches, but sometimes equalling or considerably exceeding them. Lowest panicle branches $\frac{1}{2}$ to 5 inches long. Flowers sometimes all separate, but more generally united in small fascicles. Perianth leaves $\frac{1}{4}$ inch long, pale, with a chocolate-coloured stripe on each side, outside of which there is a pale scarious margin. Capsule sometimes abortive, commonly a little longer than the perianth leaves, shortly acuminate into a mucro. Seeds minute, reddish-brown.

Mud Rush.

French, *Jonc Bothnicus.* German, *Gerard's Binse.*

SUB-SPECIES (?) II.—**Juncus compressus.** *Jacq.*

PLATE MDLXXV.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCXCIX.

Billot. Fl. Gall. et Germ. Exsicc. No. 1556.

J. bulbosus. *Sm.* Engl. Bot. No. 934. *Kunth,* Enum. Pl. Vol. III. p. 351.

J. compressus, var. *a.* *Hook. & Arn.* Engl. Bot. ed. viii. p. 464.

Rootstock subcæspitose, its branches with the stems usually placed close together. Stems compressed in the upper half. Capsule oval-subglobular, very obtuse, abruptly mucronate, commonly considerably longer than the perianth leaves. Style usually shorter than the ovary.

In marshy places and by the sides of rivers, but apparently never by brackish waters. Apparently rare. I have seen specimens only from Surrey, where I have gathered it by the Thames side at Moulsey Hurst. I have also specimens collected by Mr. H. C. Watson by the roadside between Chesington and Epsom; but in the "Flora of Surrey" he says, that "in 1860 the little pool or splash in which it grew was filled with rubbish, and the species is probably lost there." The recorded habitats of this species would extend its range from the south of England to Shetland; but this is one of those cases in which records unaccompanied by specimens cannot be trusted.

England. Perennial. Late Summer, Autumn.

Very similar to *J. Gerardi*, differing only in its more cæspitose habit, with the stems closer together and more compressed in the upper part; in the shorter panicle branches, rarely above 2 or 3 inches long, and often less, the secondary branches having a slight tendency to become scorpioid; also in the longer style, but above all in the larger, rounder, and more obtuse capsule. The length of the lowest bract, compared with that of the panicle branches, varies so much in *J. Gerardi* and *J. compressus*, that it is utterly useless as a distinguishing character, and the relative length of the perianth segments and capsule is but little to be relied upon.

If *J. compressus* and *J. Gerardi* can be proved to be mere varieties, the species should bear the name of *J. compressus* instead of the inappropriate name of *J. bulbosus*, which Linnaeus appears to have bestowed on it, through a confusion in the synonymy.

Round-fruited Rush.

German, *Zusammengedrückte Binse.*

SPECIES XIX.—*JUNCUS SQUARROSUS.* *Linn.*

PLATE MDLXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. IX. Tab. CCCC.

Billot, Fl. Gall. et Germ. Exsicc. No. 1345.

Cæspitose. Rootstock not creeping. Stems rather slender, tough, wiry, rigid, more or less compressed, furrowed, solid, leafless or very rarely with a single leaf. Radical leaves very numerous, sheathing the base of the stems and in separate barren tufts, spreading, semi-cylindrical, deeply channelled above, shorter than the stem, not appearing jointed when dry. Flowers few, in fascicles of 2 to 5 (rarely solitary), arranged in an umbellato-corymbose panicle, with the lower branches once or twice branched, erect, longer than or shorter than the lowest bract; ultimate branches very short, spreading in flower,

erect in fruit. Perianth leaves slightly unequal, oblong, the outer ones subobtusely; the inner shorter and very obtuse; all livid brown with pale scarious margins, about as long as the capsule. Stamens 6; filaments much (about four times) shorter than the anthers. Style about as long as the ovary. Capsule oval-oblong-ovoid, bluntly trigonous, obtuse, rather abruptly mucronate, olive-brown, shining. Seeds minute, with the testa not prolonged into an appendage.

On moist heaths and barren pastures. Rather common, and generally distributed, extending from Cornwall and Kent to Orkney and Shetland, but more common in upland districts.

England, Scotland, Ireland. Perennial. Summer.

A species well marked by its very numerous rigid radical leaves, which form dense barren tufts associated with flowering stems, which have 2 or 3 similar leaves sheathing their base. Flowering stems longer than the leaves, 2 to 18 inches high. Lowest panicle branches $\frac{1}{2}$ inch to $2\frac{1}{2}$ inches long. Perianth leaves nearly $\frac{1}{4}$ inch long, with pale bracts at the base.

Heath Rush.

German, *Sparrige Binse.*

EXCLUDED SPECIES.

LUZULA NIVEA. D.C.

Badger's Dingle, Salop (Mr. G. Maw), but not mentioned in Leighton's "Flora of Shropshire." Woods at Broomhall, near Dunfermline, Fife (Dr. Dewar), but planted.

JUNCUS TENUIS. Willd.

J. gracilis, Sm. (non *Brown*) Engl. Bot. No. 2176.

J. Gesneri, Sm. Engl. Fl. Vol. II. p. 167.

J. Smithii, Kunth, Enum. Pl. Vol. III. p. 349.

Said to have been found in elevated pastures in Scotland by Mr. Dickson, and by a rivulet in marshy ground among the mountains of Clova, Forfarshire, by Mr. G. Don.

SUB-CLASS II.—GLUMIFERÆ.

Essential organs of the flower with the perianth absent or represented by minute bristles or scales. Flowers in the axils of solitary or alternate subscarious bracts (*glumes* or *pales*).

ORDER LXXXVII.—CYPERACEÆ.

Annual or perennial herbs with tufted or creeping or soboliferous rhizomes, and 3-angled or cylindrical (more rarely 2- or many-angled) leafy stems, commonly solid, generally unbranched. Leaves alternate, tristichous or distichous, sheathing, with the sheath usually not split, without a free ligule; lamina usually linear and grasslike, sometimes absent, rarely oblong or lanceolate or ensiform, with parallel or cancellate venation. Flowers perfect or unisexual, monœcious or polygamous, very rarely diœcious, in heads or spikes or small cymes, disposed in corymbose panicles, or in spikes disposed in a raceme; spikes or compound spike with leaflike or scarious bracts. Glumes solitary or (very rarely) in pairs, imbricated on a common axis, pointing in 2, 3, 4, or more directions; lowest glumes of the inflorescence often empty. Perianth none, or represented by bristles or minute scales. Stamens generally 3, rarely 2 or 1, very rarely 4, 9, or 12; filaments filiform; anthers affixed by the base, erect, 2-celled, introrse. Ovary solitary, 1-celled and 1-ovuled, sometimes inclosed in a scarious flask-shaped covering (*perigynium*); style simple, or 2- or 3- cleft, with 2 or 3 stigmas. Fruit an indehiscent lenticular or 3-angled nut, sometimes enclosed in a perigynium. Seed with a thin testa; albumen farinaceous or fleshy; embryo minute, enclosed in the base of the albumen.

TRIBE I.—CYPEREÆ.

Flowers perfect. Glumes of the spikelets distichous.

GENUS I.—CYPERUS. *Linn.*

Flowers perfect, arranged in many-flowered spikelets, disposed in an umbellato-corymbose panicle or globular head. Glumes of each spikelet numerous, distichous, keeled, all similar or the lowest ones of each spikelet larger, all bearing flowers in their axils or a few of the lower ones empty. Hypogynous bristles or scales none. Stamens 1 to 3. Style deciduous; stigmas 2 or 3. Nut lenticular when there are 2, triangular when there are 3 stigmas.

Annual or perennial herbs, with the stem usually triangular, leafy at the base or throughout, and with several unequal leaflike bracts, forming an involucre to the terminal umbel or head.

The name of this genus comes from the Greek word *κύπερος*, a reed.

SPECIES I.—**CYPERUS FUSCUS.** *Linn.*

PLATE MDLXXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXX. Figs. 667, 668.

Billot. Fl. Gall. et. Germ. Exsicc. No. 85.

Annual. Rootstock none. Stems numerous, ascending, triquetrous, weak, not rigid. Panicle umbellato-corymbose, or frequently contracted into a head; branches 2 to 7, short, spreading, simple, once branched. Spikelets elliptical-strapshaped. Glumes 1-nerved, at length spreading, chocolate-colour with pale margins and a green midrib, or nearly all green. Stigmas 3. Nut triquetrous.

In ditches and by the borders of ponds. Very rare. On the margin of a peat pond on Shalford Common, near Godalming, Surrey, Mr. J. D. Salmon. At Eel-brook Meadow, Walham Green, Chelsea, Middlesex; but I believe now destroyed by the ground being drained and built over. Mr. William Mudd reported that it had been found on Guisboro' Moor, Yorkshire, but afterwards discovered that he had mixed specimens of the *Cyperus* from the Surrey station with plants collected on Guisboro' Moor.

England. Annual. Autumn.

Stems numerous, 1 to 6 inches long in British specimens, but occasionally a foot long in continental examples. Leaves grasslike, usually shorter than the stems, and commonly one about a quarter of the distance up the stem, sheathing their base. Involucre of 3 unequal bracts resembling the leaves; the lowest about 3 inches long in British specimens. Spikelets $\frac{1}{8}$ to $\frac{1}{4}$ inch long. Glumes about $\frac{1}{2}\frac{1}{4}$ inch long, keeled, ovate-oblong, obliquely truncate, so as to be subacute; keel green, sometimes very narrow, sometimes with the green extending on each side over the greater part of the glume. Nut very minute, whitish.

Brown Cyperus.

French, *Souchet brun.* German, *Schwarzbraunes Cyperus.*

SPECIES II.—**CYPERUS LONGUS.** *Linn.*

PLATE MDLXXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXXII.

Billot. Fl. Gall. et Germ. Exsicc. No. 471.

Rootstock thick, extensively creeping, without tuberous enlarge-

ments. Stems solitary, erect, triquetrous, stiff. Panicle umbellato-corymbose, lax; branches 5 to 12, elongate, arching, one to three times branched. Spikelets linear, attenuated at each end. Glumes 3- to 5-nerved, always erect, chestnut-red, with a green midrib. Stigmas 3. Nut triquetrous.

In marshes and wet meadows. Very rare. It occurs in the counties of Cornwall, Somerset, Dorset, Wilts, Isle of Wight, Kent, and Pembroke, but possibly not native in some of the stations. It is abundant in the Channel Islands.

England. Perennial. Autumn.

Rootstock rather thick, aromatic. Stem 18 inches to 3 feet high or more, about as thick as a man's little finger at the base, tapering upwards. Leaves 2 or 3; all in the lower half of the stem, firm, grooved above or sharply keeled beneath, scabrous at the edges, bright green and shining above, pale and dim beneath; sheaths reddish-brown at the base. Involucre of 3 or more unequal leaves; the lowest very long (often 1 or 2 feet), arching. Longest branches of the panicle 3 inches to nearly a foot long. Spikelets $\frac{1}{2}$ to $\frac{3}{4}$ inch long, in distichous or subdigitate clusters. Glumes $\frac{1}{8}$ inch long. The mature nut I have never seen, though I have gathered the plant in the Isle of Wight as late as the end of September.

Galingale. -

French, *Souchet long*.

The roots of this plant were once esteemed as an aromatic tonic, but are now fallen into disuse. Gerarde says: "It increaseth blood by warming the body, and maketh good digestion; wonderfully refreshing the spirits, and exhilarating the minde, comforting the senses; and encreasing their liveliness, restoring the colour decayed and making a sweet breath."

GENUS II.—SCHÆNUS. Linn.

Flowers perfect, arranged in few-flowered spikelets, disposed in a dense ovoid or cylindrical head. Glumes of each spikelet 3 to 9, distichous, keeled; 1 to 4 of the upper ones bearing flowers in their axils; the lower ones smaller and empty. Hypogynous bristles 1 to 6, denticulate, small, sometimes absent. Stamens 3. Style deciduous, its base slender, sometimes persistent; stigmas 3. Nut trigonous, tipped by the slender base of the style or pointless.

Rushlike herbs with narrow rigid radical leaves, and naked or rarely leafy scapes.

The name of this genus is from the Greek *χοῖρος* or *σχοῖρος*, a cord. The first cordage used is supposed to have been made from these plants.

SPECIES I.—**SCHÆNUS NIGRICANS.** *Lin.*

PLATE MDLXXIX.

*Reich. Ic. Fl. Germ. et Helv. Vol. VIII.**Billot, Fl. Gall. et Germ. Exsicc. No. 1559.*

Stem cylindrical, wiry, leafless. Head of flowers roundish-ovoid. Lowest bract a little longer than the spikelets, ascending. Spikelets 3 to 10. Glumes very narrowly lanceolate, fuscous; keel scabrous. Hypogynous bristles 1 to 6, about half as long as the nut, rough with ascending denticulations.

In bogs. Rather local, though generally distributed, except in the south-east of England, extending from Cornwall to Orkney and Shetland.

England, Scotland, Ireland. Perennial. Summer.

Plant growing in tufts arranged on the short branches of the rhizome, which are so close that the plant forms tussocks frequently of considerable size. Leaves commonly shorter than the stem; sheaths dilated, nearly black at the base, brownish-red above, shining; lamina rigid, semicylindrical, dull green. Stems 3 to 20 inches high. Head $\frac{3}{8}$ to $\frac{3}{4}$ inch long. Lowest bract with a broad sheathing base and a subulate, rigid, obliquely-ascending point. Glumes $\frac{3}{4}$ inch long, very dark brown, often nearly black, with the margins a little paler. Anthers shortly apiculate. Stigmas 3. Nut ovoid, triquetrous, whitish. Bristles very short, variable in number.

Black Schœnus.

French, *Choin noirâtre.* German, *Schwarzliches Kopfried.*

TRIBE II.—**SCIRPEÆ.**

Flowers (or at least most of them) perfect. Glumes imbricated all round the axis of the spikelets.

GENUS III.—CLADIUM. *Pat. Browne.*

Flowers arranged in few-flowered spikelets disposed in numerous umbellato-corymbose panicles combined into an elongate panicle. Glumes of each spikelet 3 to 6, imbricated all round the axis, not keeled, 1 to 3 of the upper ones with flowers in their axils, the lower ones smaller and empty; lowest flowers often male or imperfect, the uppermost perfect. Hypogynous bristles none. Stamens 2, rarely 3. Style

deciduous, its base conical, persistent, not pointed to the ovary; stigmas 2 or 3. Nut lenticular or trigonous, with a thick spongy coat with a thin hard outer integument, tipped by the persistent conical base of the style.

Perennial herbs, with rigid radical and cauline leaves, generally rough at the edges, and numerous small spikelets with brown glumes.

The derivation of the name of this genus is from κλάδος, a branch or twig.

SPECIES I.—CLADIUM MARISCUS. *R. Br.*

PLATE MDLXXX.*

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXXVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1347.

G. Germanicum, Schrad. Röm et Schultes, Syst. Veg. Vol. I. p. 284.

Schœnus Mariscus, Linn. Sm. Eng. Bot. ed. i. No. 950.

Stem terete, very indistinctly trigonous. Panicle erect, slender, consisting of numerous lateral umbellato-corymbose panicles and a terminal one. Spikelets collected into roundish heads.

In fens and bogs. Very local. Widely scattered through England, but very rare in Scotland, where it occurs at Ravenstone Loch, near Whithorn, Wigtonshire; and in a marsh by the roadside midway between Keylstrome and Badcal Church, Sutherland; formerly in the Bog of Restennet, Forfarshire, but is now lost there by drainage. Frequent in the west of Ireland, but rare in the east.

England, Scotland, Ireland. Perennial. Late Summer.

Rootstock creeping. Stem 2 to 6 feet high, round below, obscurely trigonous above. Leaves 18 inches to 4 feet long, rigid, glaucous, the radical ones with the sheaths brown at the base; the lamina channelled at the base and keeled for the rest of their length; points triquetrous, glaucous and serrulate-scabrous, with the teeth pointing forwards on the margins and midrib. Stem leaves with obliquely-truncate sheaths, the lamina shorter than that of the root leaves. Panicle 9 inches to nearly 3 feet long; primary bracts resembling the leaves, but becoming shorter the higher they are placed on the rachis; partial panicles racemously arranged, stalked, with the stalk partially, or sometimes wholly, included in the sheathing bract; branches of the partial panicles simple

* The dissections of the *Cyperaceæ*, added in the present edition of "English Botany" to the original plates, are mostly taken from drawings furnished by Dr. Carrington, of Eccles.

or once or twice compound; spikelets arranged in roundish heads on the ultimate branches of the partial panicles. Spikelets nearly $\frac{1}{4}$ inch long, with 5 or 6 pale chestnut glumes; the 3 outermost short, oval, barren; the next 2 or 3 longer and more lanceolate and commonly flower-bearing, but usually only one fruit is perfected in each spikelet. Anthers usually 2, apiculate. Nut ovate-ovoid, gradually acuminate-acute, very shortly beaked, chestnut, about $\frac{1}{6}$ inch long, the outer rind hard and brittle, the inner portion thicker and spongy.

Fen Sedge.

French, *Cladië marisque*. German, *Deutsche Schneide*.

In the undrained fens near Cambridge this plant used to be so common that it was used in that town for lighting fires. It serves also for thatching instead of straw, and often grows in such quantities in pools as to form floating islands. It was considered hurtful to cows. It is still cut as a crop in the Fens.

GENUS IV.—RHYNCHOSPORA. *Vahl.*

Flowers arranged in few-flowered spikelets disposed in heads or umbellate panicles, which are terminal, and commonly there are a few lateral ones below the terminal one. Glumes of each spikelet 5 to 7, imbricated all round the axis, not keeled, 2 or 3 of the upper ones with flowers in their axils, lower ones smaller and empty. Lower flowers perfect, the uppermost one frequently male or imperfect. Hypogynous bristles usually present, 3 to 6, included. Stamens 2 or 3. Style deciduous or persistent, the lower part dilated and conical at the base, which at least is always persistent; stigmas 2. Nut lenticular, biconvex, crustaceous, crowned by a beak or tubercle formed by the persistent base of the style.

Perennial herbs with narrow leaves and slender leafy stems and foliaceous bracts. Spikelets few, brown or chestnut, rarely whitish.

The name of this genus is derived from the two Greek words *ῥύγχος*, a beak, and *σπορά*, seed—the permanent base of the style forming a beak to the seed.

SPECIES I.—RHYNCHOSPORA FUSCA. *Röm. & Schultes.*

PLATE MDLXXXI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXXV. Fig. 677.

Billot, Fl. Gall. et Germ. Exsicc. No. 2561.

Schœnus fuscus, Linn. Sm. Engl. Bot. No. 1575.

Not cæspitose. Rootstock extensively creeping. Stems solitary, placed at some distance on the branches of the rootstock, trigonous

above, leafless except near the base; basal sheaths with lamina. Leaves setaceous, channelled, mostly radical. Bracts resembling the leaves, commonly much longer than the heads. Spikelets fusiform, arranged in lax spicate heads which taper towards the apex, 1 or sometimes 2 of the heads terminal and 1 lateral head below the terminal one. Glumes chestnut. Stamens 3; filaments dilated. Bristles 6, 3 of them about twice as long as the nut, with the denticulations pointing upwards. Nut roundish-obovate-ovoid, compressed, about as long as the flattened deltoid-subulate acuminate beak formed by the persistent base of the style.

In spongy bogs. Very rare. In the south-east of England, where it occurs in Cornwall, Dorset mainland, Hants, Somerset, and Glamorganshire. Local, but widely distributed in the west of Ireland, extending from co. Kerry to co. Mayo.

England, Ireland. Perennial. Late Summer.

Stems 4 to 20 inches high, very slender, with several leaves at the base, the uppermost one sheathing the stem for some distance. Spikelets about $\frac{1}{4}$ inch long, few in each head, and placed one above the other; the lower head on a long stalk, about half of which is included in the sheath of the leaflike bract. Bristles unequal, 3 of them much longer than the other 3, the longest ones about twice as long as the nut. Nut pale yellowish brown; the apical tubercle abruptly acuminate a little above the deltoid base into a long subulate point.

Brown Beak-Sedge.

German, *Braune Moorsimse.*

SPECIES II.—**RHYNCHOSPORA ALBA.** *Vahl.*

PLATE MDLXXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXXV. Fig. 678.

Billot, Fl. Gall. et Germ. Exsicc. No. 1082.

Schœnus albus, Linn. Sm. Engl. Bot. ed. i. No. 985.

Subcæspitose. Rootstock very shortly creeping. Stems several, close together in tufts, trigonous in the upper part, leafy in the lower half; basal sheaths mostly without a lamina. Leaves linear-setaceous, channelled, mostly placed on the lower half of the stem. Bracts resembling the leaves, equalling the heads or not more than twice as long. Spikelets cylindrical-fusiform, arranged in dense corymbose flat or round-topped heads; 1 or 2 of the heads terminal, and 1 or 2, or even 3, lateral heads below the terminal one. Glumes reddish-white or very pale reddish-brown. Stamens 2; filaments slender. Bristles

9 to 12, about as long as the nut, with the denticulations pointing downwards. Nut obovate-ovoid, compressed, a little longer than the flattened triangular subulate acuminate beak formed by the persistent base of the style.

Var. *α*, *genuina*.

Spikelets white, at length becoming reddish-white.

Var. *β*, *sordida*.

Spikelets pale reddish-brown.

In spongy bogs. Not uncommon, and generally distributed, but most abundant on the west side of Britain; possibly absent from a few counties on the east side. Var. *β* I have from Torch Moor, Devon; Treleck, Monmouth; and Ballygown, co. Down, Ireland.

England, Scotland, Ireland. Perennial. Late Summer.

Stems 3 to 20 inches high in small united tufts; the basal sheaths generally short, and most of them leafless. Spikelets about $\frac{1}{2}$ inch long, more numerous and much more slender than those of *R. fusca*, and placed in heads, which are flat or slightly convex at the top. Bristles more numerous and shorter than in *R. fusca*, and barbed downwards instead of upwards. Nut much narrower than in *R. fusca* and with the beak narrower at the base and less abruptly acuminate.

White Beak-Sedge.

German, *Weisse Moorsimse*.

GENUS V.—**BLYSMUS**. *Panz.*

Flowers perfect, arranged in several-flowered sessile spikelets disposed on two opposite sides of the rachis, so as to be distichous. Glumes of each spikelet imbricated all round the axis, all with flowers in their axils except the 2 lowest, which are broader than the others and empty. Hypogynous bristles 3 to 6, included, or absent. Stamens 3. Style persistent, slender, not swollen at the base; stigmas 2. Nut lenticular, plano-convex, gradually tapering into the persistent style, crustaceous.

Perennial herbs, differing from *Scirpus* only in the spikelets being arranged in a short distichous terminal spike.

The name of this genus is from βλύζω, I gush out, from the species growing near springs and in wet places.

SPECIES I.—**BLYSMUS COMPRESSUS.** *Panz.*

PLATE MDLXXXIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXCH. Fig. 693.*Billot*, Fl. Gall. et Germ. Exsicc. No. 3255.*Schoenus compressus*, *Linn.* *Sm.* Engl. Bot. No. 791.*Scirpus compressus*, *Pers.* *Koch*, Syn. Pl. Germ. et Helv. ed. ii. p. 858. *Gren. & Godr.*

Fl. de Fr. Vol. III. p. 371.

S. Caricis, *Retz.* *D.C.* Fl. Fr. Vol. III. p. 137.*S. caricinus*, *Schrad.* *Lois.* Fl. Gall. Vol. I. p. 35.

Rootstock extensively creeping. Stems rather distant, mostly solitary. Leaves flat, grasslike, rough on the edges and keel. Spikelets 16 to 20, each of them 6- to 8-flowered, arranged in an oblong compressed distichous spike; lower spikelets frequently a little remote from the others. Bract at the base of the lowest spikelet with a green foliaceous tip, frequently exceeding the spike, but sometimes shorter than it. Glumes pale chestnut, ribbed, the lowest glume of each spikelet much shorter than the spikelet. Bristles 3 to 6, stout, persistent, with their teeth reflexed.

In damp pastures and by the sides of streams. Rather rare, but widely distributed in England. Very rare in Scotland, where it occurs about Berwick-on-Tweed and Allanton, Berwickshire; near Crichton Castle, Edinburgh; and Innerkip, Renfrew.

England, Scotland, Ireland. Perennial. Summer.

Rootstock extensively creeping, producing barren tufts and flowering stems, both of which are enveloped at the base in brown leafless sheaths; above this 3 or 4 of the sheaths bear grasslike laminae 3 to 6 inches long. Stem 3 inches to 1 foot high, leafless, terminated by a spike $\frac{3}{4}$ to $1\frac{1}{2}$ inch long. Spikelets $\frac{1}{4}$ to $\frac{3}{8}$ inch long, the glumes pale chestnut, with the edges paler and scarious and the midrib usually green, the lowest ones broader than the others. Nut roundish oval-lenticular, much compressed, abruptly acuminate into a beak which tapers gradually into the style, whitish.

Broad-leaved Blysmus.

German, *Zusammengedrückte Simse.*

SPECIES II.—**BLYSMUS RUFUS.** *Link.*

PLATE MDLXXXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXCH. Fig. 694.*Schoenus rufus*, *Huds.* *Sm.* Engl. Bot. No. 1010.*Scirpus rufus*, *Schrad.* *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 858.*S. bifolius*, *Wallr.* *Sched.* Crit. p. 27.

Rootstock creeping. Stems rather close together so as to appear

fascicled. Leaves semicylindrical, not keeled, channelled above, not rough on the edges or midrib. Spikelets 6 to 12, each 2- to 4-flowered, arranged in an ovate compressed spike. Bract at the base of the lowest spikelet with a green foliaceous tip, usually shorter than the spike, but sometimes exceeding it. Glumes very dark chestnut, not ribbed, the lowest one of each spikelet nearly as long as the spikelet. Bristles 1 to 6, slender, deciduous, with their teeth ascending or spreading.

In salt marshes. Rare in England, where it occurs on the coast of Anglesea, Carnarvon, Cheshire, Lancashire, and Durham. Not uncommon in Scotland, and there generally distributed round the coast, extending to Orkney and Shetland. Rather local in Ireland, but occurring here and there on the coasts of the northern half of the island.

England, Scotland, Ireland. Perennial. Summer.

Rootstock less extensively creeping than in *B. compressus*, and with the stems closer together. Basal sheaths fuscous, leafless, the upper sheaths with a rushlike lamina 2 to 15 inches long. Stems 2 to 15 inches high. Spike $\frac{1}{4}$ to 1 inch long. Glumes much darker in colour and more shining than in *B. compressus*, concolorous. Nut considerably larger and more oval than that of *B. compressus*, and with the bristles so deciduous that they often appear to be absent.

Narrow-leaved Blysmus.

German, *Braune Simse.*

GENUS VI.—**SCIRPUS.** *Linn.*

Flowers perfect, arranged in several- or many-flowered spikes, which are sometimes solitary, at other times several or numerous, disposed in a head or umbellate panicle, but never distichous. Glumes of each spike imbricated all round the axis, all with flowers in their axils, except the 1 or 2 lowest, which are broader than the others and empty. Hypogynous bristles 3 to 12, generally 6, included or more rarely slightly exerted in fruit, rarely absent. Stamens generally 3. Style deciduous, wholly slender or swollen at the base, which in the latter case is always persistent, and in the former sometimes so; stigmas 2 or 3. Nut lenticular and plano-convex when there are 2 stigmas, trigonous or triquetrous when there are 3, in some cases tipped by the slender or enlarged bases of the style.

Perennial (rarely annual) herbs of various habit.

The name of this genus is derived from a Celtic word signifying a cord.

SECTION I.—(H)ELEOCHARIS.* *R. Brown.*

Spike solitary, terminal, without a leafy bract at the base. Hypogynous bristles 3 to 6, rarely absent (?). Nut crowned with a tubercle formed by the dilated persistent base of the style, which is separated from the nut by an articulation.

Stem slender or rather stout, leafless, the basal sheaths without any lamina.

SPECIES I.—**SCIRPUS ACICULARIS.** *Lin.*

PLATE MDLXXXV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXCIV. Fig. 695.

(H)Eleocharis acicularis, *Sm. Kunth, Enum. Pl. Vol. II. p. 141. Bab. Man. Brit.*

Bot. ed. vi. p. 371. Hook. & Arn. Brit. Fl. ed. viii. p. 492, et Auct. Plur.

Isolepis acicularis, Schlecht, Fl. Berol. Vol. I. p. 36.

Scirpidium aciculare. Nees, ab Esenb. in Linnea, Vol. IX. p. 293.

Limnochloa acicularis, Reich. Fl. Germ. Excurs. p. 541.

Rootstock sending out capillary runners, which produce small tufts at a little distance from the parent tuft. Stems capillary, very bluntly 4-sided, sulcate, leafless; basal sheaths leafless. Spike very small, ovate-fusiform or fusiform-cylindrical, subcompressed, 4- to 11-flowered. Glumes ovate, obtuse or subacute, brownish-red or dark brown, with a green keel and pale scarious margins, the lowest one completely embracing the base of the spike and as long or longer than the second glume. Hypogynous bristles 1 to 3, caducous or absent (?). Stigmas 3. Nut pale, very minute, oblong-ovoid, bluntly trigonous, not compressed, with numerous ribs, and very fine transverse striae, crowned with the subglobose acuminate dark base of the style.

By the margins of lakes and pools, especially in sandy places. Not very common, but generally distributed in England. Scarce in Scotland, whence I have specimens from Loch Maben, Dumfries; Loch Gelly and Camilla Loch, Fife; and Loch Leven, Kinross. Rare in Ireland, and only known to occur in the west of the island, chiefly about Lough Neagh, Lough Erne, and the Shannon, and tributaries or canals connected with them (*Cyb. Hib.*).

England, Scotland, Ireland. Perennial. Autumn.

Rootstock extensively creeping by extremely slender runners, which produce tufts of stems at intervals round the parent plant. Stems numerous in each tuft, very slender, erect, 1 to 6 inches high when growing out of the water, but sometimes a foot or more

* As the name is from ἑλος (*helos*), a marsh, it ought to be written with an initial H.

high when submerged; but in that case they are always (?) barren. Basal sheaths hyaline, acute, covering the reddish base of the stem. Spikes $\frac{1}{8}$ to $\frac{1}{4}$ inch long, the smaller ones fusiform, the larger oblong-cylindrical and somewhat compressed. Glumes varying from chocolate to brownish-red, with a broad green stripe on the back. Nut extremely minute, whitish, with 8 or 10 raised ribs.

Slender Club-rush.

French, *Scirpe épingle*. German, *Nadelförmiges Ried*.

SPECIES II.—**SCIRPUS PALUSTRIS.** *Linn.*

PLATES MDLXXXVI. MDLXXXVII.

(H) *Eleocharis palustris*, *R. Br.* *Kunth*, Enum. Pl. Vol. II. p. 147 *Hook. & Arn.* Brit. Fl. ed. viii. p. 491.

Rootstock stout, extensively creeping, producing tufts of stems or solitary stems at intervals all along its branches. Stems erect, rather stout, subcompressed-terete, faintly striate, leafless; basal sheaths leafless, truncate. Spike rather small, fusiform or lanceolate-cylindrical or fusiform-cylindrical, many-flowered. Glumes lanceolate, chocolate or reddish-brown, with or without a greenish keel, with broad or narrow scarious margins; lowest glume partially or wholly embracing the base of the spike, shorter and blunter than the others; upper ones subacute. Hypogynous bristles 4 to 6. Stigmas 2. Nut rather large, obovate-lenticular, biconvex, nearly smooth, with faint longitudinal striae, crowned with the compressed deltoid-triangular acuminate pale base of the style.

SUB-SPECIES I.—**Scirpus eu-palustris.**

PLATE MDLXXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXCVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2559.

S. palustris, *Sm.* Engl. Bot. No. 131.

(H) *Eleocharis palustris*, *Koch.* *Bab.* Man. Brit. Bot. ed. vi. p. 371, et Auct. Plur.

Glumes dull brown, with green midribs and broad whitish scarious margins; the lowest glume roundish and only half surrounding the base of the spike. Nut smooth under an ordinary lens.

By the sides of ponds and lakes and in marshes. Very common and generally distributed.

England, Scotland, Ireland. Perennial. Summer, Autumn.

Rootstock about the thickness of a crowquill or a little thicker, very extensively creeping, producing tufts of intermingled fertile and barren

u 2

stems, and towards the apex of the branches solitary stems; the old portion nearly black, the young whitish with darker scales at intervals. Stems 6 inches to 2 feet high, erect, with 2 reddish brown sheaths at the base, the lowest one obliquely truncate, the upper transversely so. Spike $\frac{1}{4}$ inch to 1 inch long. Glumes brown, usually with a green keel. Nut shorter than the bristles, dim, yellowish, $\frac{1}{8}$ inch long including the tubercle, which is scarcely half as long as the nut.

Marsh Club-rush.

French, *Scirpe des marais*. German, *Sumpfried.*

SUB-SPECIES II.—**Scirpus uniglumis.** *Link.*

PLATE MDLXXXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXCVI. Fig. 703.

(H) *Eleocharis uniglumis*, *Reich. Fl. Germ. Excurs. p. 532, et Auct. Plur.*

Glumes chocolate-brown, usually concolorous, with narrow white scarious margins; lowest glume broadly ovate, obtuse, almost wholly surrounding the base of the spike. Nut faintly punctate-striate under an ordinary lens.

Var. α, genuinus.

(H) *Eleocharis uniglumis*, *Bab. Man. Brit. Bot. ed. vi. p. 371.*

Nut shorter than the bristles.

Var. β, Watsoni.

(H) *Eleocharis Watsoni*, *Bab. Ann. Nat. Hist. ser. ii. vol. x. p. 20, and Man. Brit. Bot. ed. vi. p. 571.*

Nut longer than the bristles, more distinctly punctate-striate than in *var. α*.

In wet sandy places, and by the borders of ditches and rivers, near the sea. Local. Rare in England, where it is found in Dorset, Sussex, and near Southport, Lancashire. In Scotland I have found it at Gullane Links, Haddington; near Blackness Castle, Linlithgow; by the side of the Dee, near Waterloo Bridge, Kincardineshire; Kinloch-Spelive, Mull; and Swanbister, Orkney; Dr. Dickie mentions its occurrence on Aberdeen Links, and Professor Babington at Barvas, Lewis. In Ireland Dr. D. Moore states it is plentiful in a marshy pasture field between Killoughter Station and the lake near the Murrough of Wicklow. *Var. β* has been found at Southport, Lancashire, by Dr. Carington, and at Tayanloan, Argyleshire, by Dr. Balfour.

England, Scotland, Ireland. Perennial. Summer, Autumn.

Extremely similar to *S. eu-palustris*, but smaller, usually from 3 to 6

inches high, and rarely more than a foot. Spikes very similar to those of *S. eu-palustris*, but more fusiform; glumes much darker brown, and usually without any green midrib, and with the pale scarious margins much narrower, the lowest glume much larger, longer in proportion, and more acute, its two edges nearly meeting round the base of the spike; nut much more evidently punctate-striate, sometimes conspicuously so, especially in var. β , which appears to have no claims to be considered even a sub-species.

Link's Club-rush.

French, *Scirpe à une valve*. German, *Einbälziges Ried*.

SPECIES III.—**SCIRPUS MULTICAULIS.** *Sm.*

PLATE MDLXXXVIII.

Reich. Ic. Fl. Germ. et. Helv. Vol. VIII. Tab. CCXCVI. Fig. 702.

(H) *Eleocharis multicaulis*, *Sm. Engl. Fl. Vol. I. p. 64. Bab. Man. Brit. Bot. ed. vi. p. 371. Hook. & Arn. Brit. Fl. ed. viii. p. 492, et Auct. Plur.*

Rootstock very shortly creeping, producing a tuft of stems at the apex only. Stems erect or ascending, rather stout, subcompressed-terete, faintly striate, leafless; basal sheaths leafless, rather obliquely truncate. Spike rather small, oblong-fusiform, many-flowered. Glumes lanceolate, pale brown or reddish brown, with narrow pale scarious margins; lowest glume shorter and blunter than the others, wholly surrounding the base of the spike; upper ones subobtusate. Hypogynous bristles usually 5 or 6. Stigmas 3, more rarely 2. Nut rather large, turbinate-triquetrous, or (when there are only 2 stigmas) lenticular and biconvex, nearly smooth, crowned with the deltoid-triangular acuminate triquetrous base of the style.

In marshy places and heaths and by the sides of ditches on moorland. Rather local, but generally distributed over England and Scotland. Frequent in the west of Ireland, but rare in the other parts of the island.

England, Scotland, Ireland. Perennial. Late Summer,
Autumn.

Similar in habit to *S. palustris*, especially to the sub-species *S. uniglumis*, but the root, though creeping, produces only a single tuft of stems at the apex instead of several at intervals throughout its length. Stems numerous, usually diverging, and frequently recurved, 3 to 9 inches high, but sometimes, when growing in water, quite erect, and 12 to 18 inches high; basal sheaths truncate so as to leave an acute point on one side. Spikes $\frac{1}{4}$ to $\frac{3}{4}$ inch long, with the glumes blunter and paler brown than in *S. eu-palustris*, the midrib pale brown or green, the margins narrowly scarious, but scarcely white; base of the lowest

glume embracing the spike as in *S. uniglumis*. Stigmas usually 3 but sometimes only 2. Nut darker coloured and smaller than in *S. palustris*, triquetrous or sublenticular, according as there are 3 or 2 stigmas, more narrowed towards the base than in *S. palustris* and with the tubercle-like base of the style broader. Bristles usually 5 or 6, about as long as the nut.

Flower often viviparous, especially when the plant grows in water.

Many-stemmed Club-rush.

French, *Scirpe à tiges nombreuses*. German, *Vielhalmiger Ried*.

SECTION II.—BÆOTHRYON. *Dietrich.*

Spike solitary, terminal, destitute of a leafy bract at the base, the lowest glume rarely with a short leaflike point. Hypogynous bristles 3 to 6. Nut not crowned with a tubercle; the base of the style slender, separated from the nut by an articulation. Stem slender, leafless, the basal sheaths leafless, or the upper ones with a short setaceous lamina.

SPECIES IV.—**SCIRPUS PAUCIFLORUS.** *Lightf.*

PLATE MDLXXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXCIX. Figs. 707 and 708.

Billot, Fl. Gall. et Germ. Exsicc. No. 49.

S. Bæothryon, *Ehrh.* *Kunth*, Enum. Plant. Vol. II. p. 158.

Bæothryon pauciflorum, *Dietr.* Spec. Plant. Vol. II. p. 90.

(H) *Eleocharis pauciflora*, *Link*; *Lindl.* Syn. Brit. Fl. p. 281.

(H) *E. Bæothryon*, *Nees*, in *Linnaea*, Vol. IX. p. 294.

Limnochloa Bæothryon, *Reich.* Fl. Germ. Excurs. p. 78.

Rootstock very shortly creeping, producing a small tuft of stems at the apex only, and long leafless stolons. Stems erect, rather slender, terete, deeply striate, leafless; basal sheaths 2 to 3, leafless, the upper one truncate. Spike small, oval-ovoid, compressed, few-flowered. Glumes lanceolate, subobtuse, reddish-brown, with narrow pale scarious margins; the two lowest glumes larger and broader than the others, the lowest $\frac{1}{2}$ to $\frac{3}{4}$ the length of the spike, and wholly surrounding its base, hooded on its back, with the midrib not reaching the apex. Hypogynous bristles 3 to 6, retrorsely hispid. Stigmas 3. Nut turbinate, triquetrous, very finely punctate-striate, acuminate into the slender subulate base of the style.

In wet places and moors, usually where the rock or its splinters are near the surface. Not uncommon in hilly districts, but most frequent

in the north of England and in Scotland, but in the latter country not extending to Orkney or Shetland. Rather rare, but widely distributed in Ireland.

England, Scotland, Ireland. Perennial. Summer.

Very similar in habit to *S. multicaulis*, having the same manner of growth: viz. a short rootstock with a tuft of stems at the apex only, but producing long whitish stolons. The stems of *S. pauciflorus*, however, are fewer in a tuft, much more slender, and more of them barren; their height is 2 to 10 inches; the basal sheaths are tight, and rather obliquely truncate, but scarcely so much so as *S. multicaulis*. Spikes $\frac{2}{3}$ to $\frac{4}{5}$ inch long; the two lowest glumes larger than the others, and opposite, the lowest one somewhat hooded at the base on the back; all the glumes with flowers on their axils, the number of flowers in each spike varying from 3 to 7. Nut yellowish-grey, similar in size and shape to that of *S. multicaulis*, but under an ordinary lens more distinctly punctate-striate, and gradually attenuated into the slender dark base of the style, which does not form a tubercle as in *S. multicaulis*. Hypogynous bristles usually 6, three long and three short, the longest ones about as long as the nut.

Chocolate-headed Club-rush.

German, *Armblüthige Simse*.

SPECIES V.—**SCIRPUS CÆSPITOSUS.** *Linn.*

PLATE MDXC.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCC. Fig. 710.

Billot, Fl. Gall. et Germ. Exsicc. No. 2953.

Bæothryon cæspitosum, Dietr. Spec. Plant. Vol. II. p. 89.

(H) *Eleocharis cæspitosa, Link; Lindl. Syn. Brit. Fl. p. 281.*

Limnochloa cæspitosa, Reich. Fl. Germ. Excurs. p. 79.

Rootstock not creeping, producing a large very dense tuft of stems, without stolons. Stems erect and ascending, slender, terete, deeply striate, leafless; basal sheaths numerous, one or two of the upper ones furnished with a very short setaceous-herbaceous lamina. Spike small, oblong-cylindrical, compressed, few-flowered. Glumes lanceolate, subacute, orange-brown; the two lowest glumes larger and broader than the others, nearly as long as the spike, the lowest one sometimes exceeding it, but not entirely surrounding its base, not hooded on the back, with the midrib extending to the apex, and usually produced beyond it, forming either a green callous point, or a more or less elongate leaflike process. Hypogynous bristles usually

6, glabrous. Stigmas 3. Nut oblong-obovate, triquetrously concavo-convex, acuminated into the slender subulate base of the style.

On heaths. Common, and universally distributed.

England, Scotland, Ireland. Perennial. Summer.

Very densely caespitose, growing in roundish very compact tufts. Stems slender, 2 inches to 1 foot long, the centre ones erect, the outer ones ascending or drooping. Spikes $\frac{2}{5}$ to $\frac{4}{5}$ inch long; the lowest glume with a green point, which sometimes extends considerably beyond the spike. Hypogynous bristles at length considerably longer than the nut. Nut dark brown, about $\frac{1}{10}$ inch long, exclusive of the mucro formed by the base of the style.

Remarkable for the numerous sheaths which surround the base of the stems, and for the uppermost sheaths terminating in a short leaf, which is from $\frac{1}{4}$ to $\frac{1}{2}$ inch long.

Late in the autumn the outer glumes fall off and leave the long bristles exposed.

Scaly-stemmed Club-rush.

French, *Scirpe gazonnant*. German, *Rasensimse*.

SPECIES VI.—**SCIRPUS PARVULUS.** *Röm. & Schultes.*

PLATE MDXCI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXCIX. Fig. 706.

A. G. More, in Seemann's Journ. Bot. 1868, p. 321.

S. humilis, Wallr. Sched. Crit. p. 27.

Bæothryon nanum, Dietr. Spec. Plant. Vol. II. p. 91.

(H) *Eleocharis parvula, Hook. Brit. Fl. ed. v. p. 418.*

(H) *Eleogiton parvula, Link, Hort. Berol. Vol. I. p. 285.*

Limnochloa parvula, Reich. Fl. Germ. Excurs. p. 78.

Rootstock capillary, creeping, producing tufts of stems separate from the parent plant, and also stoloniferous; the stolons capillary and terminating in a minute oblong-cylindrical beaked bulb. Stems several, erect (?) and ascending-recurved, slender, subcompressed-terete, smooth, leafless; basal sheath 1, very short, formed of the scale of the above-mentioned bulb, without any lamina. Spike very small, ovate-fusiform, 3- to 5-flowered. Glumes ovate, subacute, whitish-pellucid, with green midribs; lowest glume barren, broadly green on the back, not longer than the others, two-thirds to three-quarters the length of the spike, the base of which it entirely surrounds, not hooded on the back, with the midrib not extending to the apex. Hypogynous bristles "4 to 6" (*Kunth*) or 3 (*A. G. More*), retrorsely hispid. Stigmas 3. Nut "obovate, trigonous, smooth" (*A. G. More*).

In soft mud by the sea. Very local. Discovered in Britain by

the Rev. G. E. Smith on a mud flat at Lymington, Hants, but probably now extinct there, as Mr. Borrer and Dr. Bromfield were unable to find it. The latter believes that "the exact place where the plant grew is now occupied by a rectangular reservoir for the supply of the baths." The Rev. G. E. Smith writes, "The plant grows in a pit dug out of the sandy bank, about 20 feet long by nearly the same breadth, and about 6 feet deep: in the bottom of this pit the *S. parvulus* grew in company with *S. Savii*." Found in July 1868 by Mr. A. G. More on soft mud overflowed at high tide, in salt marsh creeks at the mouth of the River Ovoca, coast of Wicklow, Ireland.

England (extinct?), Ireland. Perennial. Autumn.

Plant growing in small tufts, with translucent, loosely cellular recurved stems, 1 to 2 inches high; many of these stems are barren and have been erroneously described as radical leaves. Spike $\frac{1}{2}$ to $\frac{1}{3}$ inch long. Anthers much longer than the filaments. In all the fresh specimens I have examined I find only three bristles, as Mr. More describes them. The mature nut I have not seen, the numerous living specimens kindly forwarded to me by Mr. A. G. More being all in flower. I have the plant in cultivation from the Irish station, but though it flowers freely, it does not fruit.

Least Club-rush.

German, *Kleine Simse*.

SECTION III.—(H)ELEOGITON. *Link.*

Spike solitary, at the extremity of axillary peduncles, without a leafy bract at the base. Hypogynous bristles absent. Nut not crowned with a tubercle. Stems slender, leafy. Leaves shortly sheathing.

SPECIES VII.—**SCIRPUS FLUITANS.** *Lin.*

PLATE MDXCII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXCVIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2558.

(H)Eleogiton fluitans, *Link, Hort. Berol. Vol. I. p. 284.*

Isolepis fluitans, R. Br. Kunth, Enum. Plant. Vol. II. p. 188. Hook. & Arn. Brit. Fl. ed. viii. p. 492.

Dichostylis fluitans, Pal. de Beauv. Reich. Fl. Germ. Excurs. p. 75.

(H)Eleocharis fluitans, *Hook. Brit. Fl. ed. v. p. 418.*

Stems floating, branched, with alternate shortly sheathing linear leaves. Peduncles axillary and terminal. Spike solitary, very small, ovate-fusiform, 3- to 5-flowered. Glumes ovate, obtuse, whitish-pellucid, with green midribs; lowest glume fertile, broadly green on

the back, not longer than the others, about half as long as the spike, the base of which it does not entirely surround, not hooded at the base, with the midrib extending to the apex. Hypogynous bristles none. Stigmas 2. Nut small, obovate-lenticular, plano-convex smooth, not acuminate, abruptly mucronate from the short slender subulate, persistent base of the style.

In ditches, ponds, and splashes. Not very common, but universally distributed.

England, Scotland, Ireland. Perennial. Summer.

Stems varying according to the depth of the water in which they grow, often slightly dichotomously branched. Leaves $\frac{3}{4}$ to $1\frac{1}{2}$ inch long; the lamina much longer than the sheaths. Peduncles 1 to 2 inches long, each terminated by a single spike about $\frac{1}{8}$ inch long. Nut about $\frac{1}{16}$ inch long, very pale olive, the base of the style brown.

When growing on mud from which the water has dried, this plant becomes densely caespitose, producing numerous tufts of leaves, but no stems; the leaves in each tuft sheathe each other, and resemble those on the floating stems of the ordinary state of the plant: they are true leaves, not imperfectly developed stems, as Andersson supposes.

Scirpus parvulus has been considered a small variety of *S. fluitans*. The two, however, have nothing in common, except the small spikes and pale glumes.

Floating Club-rush.

French, *Scirpe flottant*. German, *Fluthende Simse*.

SECTION IV.—ISOLEPIS. *Link.*

Spikes 1 to 4, sessile or shortly stalked, in an umbel which is more or less pseudo-lateral from being in the axil of a foliaceous bract resembling a continuation of the stem. Glumes somewhat folded longitudinally, strongly keeled. Hypogynous bristles none. Nut not crowned with a tubercle; the base of the style not dilated. Stem very slender, leafless, the basal sheaths with short subulate leaves.

SPECIES VIII.—**SCIRPUS SAVII.** *Seb. & Maur.*

PLATE MDXCIII

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCCI. Fig. 714.

Billot, Fl. Gall. et Germ. Exsicc. No. 1560.

Isolepis Savii, Hook. & Arn. Brit. Fl. ed. viii. p. 493.

S. Saviana, Schultes, Mant. II. p. 63.

Caespitose. Stems numerous, filiform, weak, cylindrical, striate, leafless: the basal sheaths terminated by a more or less elongated

setaceous lamina. Spikes 2 or 1 (rarely 3), pseudo-lateral, sessile or subsessile, ovate-ovoid, as long as or shorter than the foliaceous bract, which resembles a continuation of the stem. Glumes obtuse, olive or greenish, usually striped with dark reddish-brown between the midrib and margins. Stigmas 3. Hypogynous bristles absent. Nut roundish-turbinate, bluntly trigonous, mucronate, dark brown, shining, finely punctate-striate.

Var. α , *genuinus*.

I. Saviana, *Kunth*, Enum. Plant. Vol. II. p. 193.

Spikelets 2 or 3. Lowest bract usually longer than the spikelet.

Var. β , *monostachys*.

Isolepis pygmæa, *Kunth*, Enum. Plant. Vol. II. p. 191.

Spikelet solitary, often as long as the outer bract.

In wet places, especially near the sea. Local. Common in the south and west of England and south-west of Scotland; from the Isle of Wight to Cornwall; and from thence north to Argyleshire. Generally distributed round the coast of Ireland. Var. β , not uncommon in the same localities as the type.

England, Scotland, Ireland. Perennial, ("Annual," *Bab.*) Summer. Autumn.

Stems numerous, very slender and weak, spreading in all directions, 2 to 9 inches high, each with a basal sheath which is reddish below, and terminates in a lamina from $\frac{1}{8}$ to 3 inches long. Bracts unequal, the lowest one as long as or a little longer than the spikes, rarely much longer, generally under $\frac{1}{4}$ inch long, although I have seen it quite 1 inch; inner bract always shorter than the spikelets. Spikes $\frac{1}{8}$ to $\frac{1}{4}$ inch long, sessile, one above the other; but as the lower glumes fall off before the others and leave the rachis naked, the spikelets appear to be stalked late in the season. Glumes roundish-ovate, variable in colour, sometimes wholly green and olive, at other times with brown separate or confluent stripes between the green midrib and margin, most conspicuous towards the apex. Nut about $\frac{1}{10}$ inch, pale brown, bluntly compressed-triangular, without evident longitudinal furrows.

Savi's Club-rush.

French, *Scirpe de Savi*. German, *Nadelförmiges Ried*.

SPECIES IX.—**SCIRPUS SETACEUS.** *Linn.*

PLATE MDXCIV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCCI. Figs. 711 and 712.*Billot*, Fl. Gall. et Germ. Exsicc. No. 1774.*Isolepis setacea*, *R. Br.* *Hook. & Arn.* Brit. Fl. ed. viii. p. 493. *Kunth.* Enum. Plant. Vol. II. p. 193.

Cæspitose. Stems numerous, setaceous, rather firm, cylindrical, striate, leafless; the basal sheaths very obliquely truncate, or terminated by a more or less elongate setaceous lamina. Spikes 2 or 3 (more rarely 1), pseudo-lateral, sessile or subsessile, ovate-ovoid, shorter than the lowest bract. Glumes subobtusely, olive or greenish, with a broad dark brown patch between the midrib and the margins towards the apex. Stigmas 3. Hypogynous bristles absent. Nut obovate-turbinate trigonous, mucronate, brown, with longitudinal clathrate ribs.

In damp places (especially such as are inundated in winter), on sandy and gravelly soil. Rather common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer, Autumn.

Very similar to *S. Savii*, but with the stems fewer, thicker, and stiffer, and commonly shorter; for though I have seen them 8 inches long, they are more frequently 3 to 5 inches. Spikes very similar in size and shape, but with the glumes darker, with only the midrib and margins green or pale. Nut a very little larger than that of *S. Savii*, darker and redder brown, with deep longitudinal furrows, which leave raised ribs between them: these ribs are transversely divided by slender cross lines.

This plant is of a deeper green than *S. Savii*, and does not assume the sickly yellow tint which prevails in that plant late in the season.

Bristle-like Club-rush.

French, *Scirpe sétacé*, German, *Borstenförmige Simse*.

SECTION V.—**HOLOSCHÆNUS.** *Link.*

Spikes numerous, collected into rounded heads arranged in a simple or compound umbellato-corymbose panicle, which is pseudo-lateral from being in the axil of a foliaceous bract, which resembles a continuation of the stem. Glumes slightly concave. Hypogynous bristles none. Nut not crowned by a tubercle; base of the style not dilated. Stem stout, leafless; basal sheaths closed by a network of fibres, terminating in a short stiff channelled lamina.

SPECIES X.—**SCIRPUS HOLOSCHÆNUS.** *Linn.*

PLATE MDXCVII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCCXVIII. Fig. 471.*Holoschœnus* Linnæi, *Reich.* Fl. Germ. Excurs. p. 76; and Ic. l. c. p. 45.*H. vulgaris*, *Link*, Hort. Berol. Vol. I. p. 293.*Isolepis Holoschœnus*, *Röm. & Schultes*; *Hook. & Arn.* Brit. Fl. ed. viii. p. 493.*Kunth*, Enum. Plant. Vol. II. p. 200.

Cæspitose. Rootstock growing in large tufts, its branches shortly creeping, thick, with the stems placed close together one before the other. Stems numerous, stout, stiff, cylindrical, finely striate, leafless; basal sheaths several, at length connected down the front by a network of fibres, the uppermost or two or three of the uppermost ones terminated by a more or less elongate rigid narrowly linear semi-cylindrical channelled lamina with scabrous margins: rarely without leaves. Spikes numerous, ovate, combined into dense sessile and stalked heads, which are arranged in a simple or slightly compound umbellate pseudo-lateral panicle. Bracts unequal, the lowest one much longer than the panicle, and resembling a continuation of the stem; the second one also frequently exceeding the panicle, but sometimes shorter than it. Glumes roundish-obovate, subobtusely emarginate, mucronate, keeled, variegated with brown and green, ciliated, scabrous. Stigmas 3, elongate. Hypogynous bristles none ("4 to 6," *Reich.*). Nut very minute, oval-subglobular, mucronate, compressed-triquetrous, blackish, very finely transversely rugose under an ordinary lens.

In damp sandy places. Very rare. Braunton Burrows, North Devon, about half a mile to the north of the lighthouse, in hollows among the sandhills which are wet only in winter. It has been recorded from several other counties, as Dorset, Hants, and Somerset, but there is no recent authority for its occurrence in any of these places. Mr. T. B. Flower informs me that it certainly does not now grow at Watchet.

England. Perennial. Autumn.

A rigid rushlike plant, varying considerably, or perhaps really consisting of two or three subspecies. The British form is from 2 to 3 feet high, usually only the uppermost sheath with a lamina, which varies much in length, and has a white stripe down the middle of the upper side. Heads numerous, about the size of black currants, one or two of the uppermost ones sessile, the rest on stalks, of which the lowest are from 1 to 3 inches long and simple, or the longest ones

branched. Spikes minute. I have not seen hypogynous bristles in this plant, but few fruiting specimens have passed through my hands. The British plant I have not seen in fruit.

I am indebted to Mr. T. B. Flower for living specimens of the Devonshire plant.

Round-headed Club-rush.

French, *Scirpe à têtes rondes*. German, *Knopfgrasartige Simse*.

SECTION VI.—JUNCO-SCIRPUS.

Spikes several, sessile in a head, or numerous and arranged in a compound or decompound umbellato-corymbose panicle, which is pseudo-lateral from being in the axil of a foliaceous bract resembling a continuation of the stem. Glumes slightly concave. Hypogynous bristles 2 to 6. Nut not crowned with a tubercle; base of the style not dilated. Stem stout, leafless, the basal sheaths closed, without a network, destitute of a lamina or terminated by a linear-triangular or linear lamina. The barren state of some of the species sometimes has very long linear leaves, like those of *Sparganium affine*.

SPECIES XI.—**SCIRPUS LACUSTRIS.** *Lim.*

PLATES MDXCVI. MDXCVII. MDXCVIII.

Not caespitose. Rootstock extensively creeping, its branches with the stems placed at short intervals one before the other. Stems numerous, thick, soft, terete or sometimes bluntly trigonous in the upper part, smooth, leafless; basal sheaths several, pointed, leafless, or the uppermost one with a strapshaped- or linear-triangular channelled lamina: sometimes when growing in running water most of the barren tufts consist of long flat linear translucent submerged leaves. Spikes numerous, ovate-ovoid or oblong-fusiform in fruit, aggregated into stalked heads of from 2 to 5 spikes and solitary, arranged in a compound or decompound umbellato-corymbose pseudo-lateral panicle, which afterwards becomes terminal. Bracts very unequal, the lowest one herbaceous, terete, and at first resembling a prolongation of the stem, shorter than the panicle or exceeding it. Glumes oval or oval-obovate, deeply notched, mucronate or subaristate, reddish-brown, sometimes fimbriate-ciliate, smooth or scabrous; lobes obtuse. Stigmas 2 or 3. Hypogynous bristles 4 to 6, shorter than the nut. Nut obovate, mucronate, bluntly trigonous when there are three stigmas, or plano-convex when there are only two, nearly smooth, rather dim.

SUB-SPECIES I.—*Scirpus eu-lacustris*.

PLATE MDXCVI.

*Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCCVI.**S. lacustris, Auct. Plur.**S. lacustris, var. a, genuinus, Gren. & Godr. Fl. de Fr. Vol. III. p. 372.*

Stem terete throughout, deep green; sheaths leafless except when growing in running water, in which case there are often long linear laminae. Floating leaves common in rivers. Spikes ovate-ovoid in fruit. Glumes glabrous. Anthers with the apiculus ciliated. Stigmas usually 3. Nut compressed-trigonous.

In lakes, ponds, and slow streams. Common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer.

Rootstock thick, black, creeping, each division of it producing numerous stems one before the other. Stems about the thickness of a man's finger at the base, 3 to 8 feet high, spongy and white in the inside, with a smooth flexible green exterior; sheaths black at the base, brown above, the uppermost ones green, without any lamina when growing in perfectly still water, but when growing in running streams there is frequently a lamina of several inches long in the upper sheath: besides this, in running water numerous barren tufts of leaves are produced, often of great length, and resembling those of *Sparganium affine*. Panicle at first pseudo-lateral, but in fruit it appears terminal, from the lowest bract being pushed to one side; panicle branches numerous, the lowest ones $\frac{3}{4}$ to 1 inch long. Spikes $\frac{1}{4}$ to $\frac{1}{2}$ inch long, fusiform in flower, becoming ovate-ovoid in fruit. Anthers pale yellow, the connective produced beyond the anther cells, and always (?) fringed. Bristles about as long as the nut, retrorsely hispid. Nut $\frac{1}{8}$ inch long, very pale green, dim, under a lens appearing etched with very numerous short longitudinal lines.

Common Bull-rush.

French, *Scirpe des lacs*. German, *Seesimse*.

This plant is called the Bullrush in some parts of England, though the name is more commonly given to *Typha latifolia*. It grows in clear stagnant water, throwing up numerous round stems from three to eight feet in height. These stems are used for making the bottoms of chairs, mats, and hassocks, also in fenny districts for thatching buildings. They are likewise consumed largely by coopers for placing between the staves of casks. Large quantities are brought for these purposes from Holland, being first dried in the sun, and tied up in large bundles for sale. In hot weather the Tartars lie upon mattresses made of these rushes.

The roots are very astringent and diuretic, and were formerly employed in medicine, but are no longer used. The old name for the large Bull-rush seems to have been

"bumbles." Gerarde tells us that "the tender leaves that be next the root make a convenient ointment against the biting of the spider called *Phalangium*."

SUB-SPECIES II.—*Scirpus Tabernämontanæ*. *Gmel.*

PLATE MDXCVII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCCVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2147.

S. glaucus, *Sm.* Engl. Bot. No. 2321; and Engl. Fl. Vol. I. p. 57 (non *Nees*, et *Esch.*).

S. lacustris β , *digynus*, *Godr.* *Gren.* & *Godr.* Fl. de Fr. Vol. III. p. 372.

(H) *Eleogiton glaucum*, *Reich.* Fl. Germ. Excurs. p. 17.

Stem terete throughout, glaucous green; sheaths leafless, or the upper ones terminated by a short linear-triangular lamina. No floating leaves. Spikelets ovate-ovoid in fruit. Glumes rough on the back, with dark brown asperities. Anthers with the apiculus not ciliated. Stigmas 2. Nut plano-convex.

In ditches and pools near the sea, or (more rarely) inland. Very common, and generally distributed on the English coasts. Less abundant in Scotland, extending north to Forfar and Islay. Frequent in Ireland.

England, Scotland, Ireland. Perennial. Summer.

Very similar to *S. eu-lacustris*, but commonly smaller, being 1 to 4 feet high, and of a dull glaucous green, by which it is readily distinguished when growing. The glumes also are thickly studded on the outside with small brown points. The anthers appear to have the apiculus glabrous or slightly scabrous, not fringed at the margins. Styles always 2, and, in consequence, the nut is plano-convex, not at all trigonous.

Glaucous Bullrush.

French, *Scirpe à Tabernæmontani*. German, *Tabernämontan's Simse*.

SUB-SPECIES III.—*Scirpus carinatus*. *Sm.*

PLATE MDXCVII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCCVIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2148.

S. Duvallii, *Hoppe.* *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 856. *Gren.* & *Godr.*

Fl. de Fr. Vol. III. p. 375. *Kunth*, Enum. Plant. Vol. II. p. 164. *Reich.* Ic. l.c. p. 42

(H) *Eleogiton trigonum*, *Reich.* Ic. Fl. Germ. Excurs. p. 77.

Stems terete below, more or less distinctly trigonous in the upper part, bright deep green; sheaths, or at least the uppermost one, with a linear-triangular more or less elongate lamina. No floating leaves.

Spikelets oblong-ovoid in fruit. Glumes smooth, or slightly rough with scattered asperities. Anthers with the apiculus not ciliated. Stigmas 2. Nut plano-convex.

On the muddy banks of tidal rivers. Very local. Plentiful on the banks of the Thames, on both sides of the river from Kew to Wandsworth, and formerly on the Kentish shore below Greenwich, but the station is now destroyed there by the improvement of the river banks; on the banks of the Arun near Amberley, Sussex. It has been reported from other places, but probably erroneously. It certainly does not now grow at Ham Ponds or other places, Sandwich; nor in East Wear Bay, in South Kent, where it was said to occur, by the Rev. G. E. Smith, in the "Flora of South Kent."

England. Perennial. Summer, Autumn.

The stem varies from $1\frac{1}{2}$ to 6 feet high or more, and is more or less evidently 3-sided towards the apex. Very similar to the two preceding sub species, differing from *S. eu-lacustris* only in the stem being more or less trigonous above; the anther-point not fringed, the stigmas 2; and the nut plano-convex. From *S. Tabernamontana* it differs in the stem not being glaucous nor terete to the summit, and the glumes not scabrous or but slightly so; from both by the longer and more cylindrical spikelets.

Trigonous-stemmed Bullrush.

French, *Scirpe caréné.* German, *Duval's Simse.*

SPECIES XII.—**SCIRPUS TRIQUETER.** *Lim.*

PLATE MDXCIX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCCV.

Willot, Fl. Gall. et Germ. Exsicc. No. 1083.

S. Pollichii, *Gren. & Godr.* Fl. de Fr. Vol. III. p. 374.

(H) *Eleogiton triquetrum,* *Reich.* Fl. Germ. Excurs. p. 77.

Not caespitose. Rootstock extensively creeping, its branches with the stems placed at intervals one before the other. Stems several, thick, soft, triquetrous throughout, leafless; basal sheaths several, pointed; the lowest ones leafless, the uppermost one with a strap-shaped- or linear-triangular triquetrous channelled lamina; the barren tufts never producing long floating leaves. Spikes several or few, ovate-ovoid in fruit, aggregated into stalked heads of from 2 to 5 spikes, and solitary, arranged in a simple umbellato-corymbose pseudo-lateral panicle, or sometimes the spikes all sessile, from 3 to 8 in a pseudo-lateral head: in either case the inflorescence does not become terminal in fruit. Bracts very unequal, the lowest one herbaceous, triquetrous,

and always resembling a prolongation of the stem, longer than the panicle. Glumes oval-obovate, deeply notched, mucronate, reddish-or olive-brown, sometimes fimbriate-ciliate, smooth; lobes obtuse. Stigmas 2. Hypogynous bristles 2 to 6, shorter than the nut. Nut obovate, slightly acuminate-mucronate, plano-convex, smooth, shining.

Var. α , *vulgaris*. Reich.

Flowers in an umbellato-corymbose panicle, with the lower branches more or less elongated.

Var. β , *conglomeratus*. Reich.

Spikes all sessile, collected into a head.

On the muddy banks of tidal rivers. Very local. Not unfrequent on the banks of the Thames, on both sides of the river from Battersea to Kew. On the banks of the Arun near Amberley, Sussex.

England. Perennial. Autumn.

Rootstock similar to that of *S. lacustris*, but more slender, and with the stems usually more remote. Stems 18 inches to 4 feet high, with a triangular section, two of the sides flat, the third grooved, with three sharp angles; uppermost sheaths with the lamina 2 to 4 inches long, tapering to a sharp point. Lowest bract 1 to 3 inches long. Spikes less numerous than is usually the case in any of the forms of *S. lacustris*, with the glumes commonly with paler margins, and often more or less green on the midrib. Anthers pale yellow, with a short and rather obtuse smooth apiculus. Nut (which I have never seen ripen in the British plant) about $\frac{1}{10}$ inch long, less rounded at the apex, pale brown, much more shining and less evidently marked with short striæ than in any of the forms of *S. lacustris*.

Three-edged Bulrush.

French, *Scirpe triangulaire*. German, *Pollich's Simse*.

SPECIES XIII.—**SCIRPUS PUNGENS.** Vahl.

PLATE MDC.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCCIV.

Billot, Fl. Gall. et Germ. Exsicc. No. 1084.

S. Rothii, Hoppe; Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 857. Gren. & Godr. Fl. de Fr. Vol. III. p. 375.

S. tenuifolius, D.C. Fl. Fr. Vol. VI. p. 300.

(H) *Eleogiton pungens*, Reich. Fl. Germ. Excurs. p. 78.

Not caespitose. Rootstock extensively creeping, its branches with the stems placed at intervals one before the other. Stems several.

rather stout, firm, triquetrous throughout, leafless; basal sheaths several, the lowest one leafless, the 2 or 3 upper ones with elongate linear-triquetrous channelled laminae; the barren tufts never producing long floating leaves. Spikes few (2 to 6), ovate-ovoid in fruit, all sessile, arranged in a pseudo-lateral head, which does not become terminal in fruit. Bracts very unequal, the lowest one herbaceous triquetrous and always resembling a prolongation of the stem, much longer than the head. Glumes oval-ovate, deeply notched, mucronate, sometimes fimbriate-ciliate, smooth; lobes acuminate-acute. Stigmas 2. Hypogynous bristles 1 to 2 ("2 to 6," *Kunth*), much shorter than the nut. Nut obovate-truncate, mucronate, plano-convex, nearly smooth, dim.

On the banks of St. Ouen's Pond, Jersey. Possibly it occurs at Lodmoor near Weymouth, as specimens were sent to Mr. I. C. Mansel with plants from that neighbourhood; but he has not been able to obtain satisfactory information as to whether the specimens of *S. pungens* were gathered in Dorsetshire or no.

England (?), Channel Islands. Perennial. Summer.

S. pungens resembles *S. triquetra*, but is smaller and more slender; the rootstock is thinner; the stems 6 inches to 2 feet high; the leaves, however, are longer and narrower, the laminae being frequently 4 to 6 inches long; the spikes are considerably larger, rarely less than $\frac{1}{2}$ inch when in fruit, and always sessile; the glumes are more colourous, reddish-brown without any green on the midrib, and with the margins not conspicuously paler; the apical lobes on each side of the central mucro of the glume are acuminate into sharp points; the lowest bract is much longer; the anthers have a longer and more acute apiculus; the nut is much more truncate at the apex and more attenuated below, pale olive inclining to straw-colour, resembling in sculpture and general appearance rather that of *S. lacustris* than of *S. triquetra*.

Leafy-stemmed Bullrush.

French, *Scirpe piquant*. German, *Stechende Simse*.

SECTION VII.—CYPERO-SCIRPUS.

Spikes several or numerous (rarely solitary), sessile in a terminal head, or several or very numerous and arranged in a terminal simple or compound or decomposed umbellato-corymbose panicle, surrounded by several bracts resembling the leaves. Hypogynous bristles 1 to 6, rarely absent. Nut not crowned with a tubercle; the base of the

style not dilated. Stem stout, leafy; stem leaves with short sheaths and a long sedgelike lamina.

SPECIES XIV.—**SCIRPUS MARITIMUS.** *Linna.*

PLATE MDCL.

Billot, Fl. Gall. et Germ. Exsicc. No. 2557.

Not caespitose. Rootstock extensively creeping, its branches frequently swollen into tubers, with the stems placed in tufts or solitary, usually at distant intervals one from the other. Stems few, stout, firm, triangular throughout, leafy on the lower half. Leaves few, sheathing, linear, channelled, keeled. Spikes several or few, ovate- or cylindrical-fusiform in fruit, large, aggregated into stalked heads of from 2 to 5 spikes and solitary, arranged in a simple umbellato-corymbose terminal subunilateral panicle, or sometimes the spikes all sessile, from 3 to 12 in a terminal subunilateral head; or rarely reduced to 1 sessile spike. Bracts unequal, 1 or 2, or even 3 of the lowest resembling the leaves, the lowest longer than the panicle. Glumes oblong-ovate, deeply notched, aristate, dark chestnut-brown, smooth or pubescent; lobes acute. Stigmas 3 or 2. Hypogynous bristles 1 to 6, much shorter than the nut ("sometimes absent," *Kunth*). Nut obovate or roundish-obovate, truncate or emarginate, shortly mucronate, compressed-trigonal when there are 3 stigmas, plano-convex when there are 2, thickly and finely punctate, shining.

Var. α , *umbellatus.* *Reich.*

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCCX.

Flowers in an umbellato-corymbose panicle, the lower fascicles stalked.

Var. β , *compactus.* "*Krock.*" *Reich.*

Reich. Ic. l. c. Tab. CCCXI. Fig. 727.

Spikes in a head, all sessile. Plant usually smaller than in var. α .

In brackish ditches and salt marshes, chiefly by the sides of tidal rivers, rarely occurring inland. Common, and generally distributed in England. More rare in Scotland, and not reaching north of Aberdeen, Ross, and Argyle.

England, Scotland, Ireland. Perennial. Late Summer, Autumn.

Rootstock about as thick as a crowquill, black, sometimes swollen at intervals into knobs or tubers from the size of a pea to that of a damson

plum. Stem 18 inches to 3 feet high or more. Leaves long, firm, deep green, shining, 6 inches to 2 feet long by $\frac{1}{8}$ to $\frac{1}{2}$ inch broad; lowest bract 3 inches to 1 foot long, the second and third ones shorter. Spikes $\frac{1}{2}$ to $1\frac{1}{2}$ inch long. Glumes very dark brown, with the midrib excurrent into a long mucro or short awn. Nut $\frac{1}{8}$ inch long, yellowish-brown, commonly bluntly trigonous, with the inner side nearly flat, the two other sides flat or with a blunt longitudinal groove.

In the north, the form with the spikes all sessile appears to be more abundant than the type.

This species has somewhat the habit of *Cyperus longus*, except that the spikes are much larger and fewer.

Sea Club Rush.

French, *Scirpe maritime*. German, *Meerstrands-Simse*.

SPECIES XV.—*SCIRPUS SYLVATICUS*. *Lin.*

PLATE MDCII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCCXIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2952.

Not caespitose. Rootstock extensively creeping, its branches with the stems placed at distant intervals one from the other. Stems solitary, stout, firm, trigonous, erect, not rooting, leafy in the lower half. Leaves rather numerous, sheathing, broadly linear, flat, keeled. Spikes very numerous, ovate-ovoid in fruit, very minute, aggregated into stalked heads of from 2 to 5 spikes and solitary, arranged in a repeatedly compound effuse umbellato-corymbose terminal panicle. Bracts unequal, 1 or 2 of the lowest resembling the leaves, all usually shorter than the panicle. Glumes ovate, entire, obtuse, and sometimes apiculate, olive, with minute black dots and three pale ribs, smooth. Stigmas 3. Hypogynous bristles 6, retrorsely hispid, about as long as the nut. Nut obovate, acuminate-mucronate, trigonous, very finely punctured, dim.

In wet places, chiefly by the sides of ditches or streams, and in woods. Generally distributed, but not very common in England. Rare in Scotland, extending to Aberdeen, Banff, and Argyle. Local in Ireland, where it occurs both in the south and north of the island.

England, Scotland, Ireland. Perennial. Summer.

Stems 18 inches to 3 feet high, stout at the base, tapering upwards so as to become slender beneath the panicle. Leaves 1 to 2 feet long by $\frac{3}{4}$ to 1 inch broad. Lowest bract 3 to 6 inches long; panicle very large; lower branches at length 4 to 8 inches long. Spikes $\frac{1}{8}$ to $\frac{1}{6}$ inch long. Nut about $\frac{1}{10}$ inch long, very pale yellowish-green, appearing punctured only under a high magnifying power.

A very handsome plant, with somewhat the habit of *Luzula sylvatica*, but the foliage is paler, and the panicle considerably larger.

Wood Club Rush.

French, *Scirpe des bois.* German, *Wald Simse.*

GENUS VII.—**ERIOPHORUM.** *Linn.*

Flowers perfect, arranged in several or many-flowered spikes, which are sometimes solitary, at other times several and disposed in an umbellate panicle, but never distichous. Glumes of each spike imbricated all round the axis, all with flowers in their axils, except 2 or 3 of the lowest, which are larger than the others and empty. Hypogynous bristles very numerous (rarely only 6), included while in flower, but becoming greatly exerted and white or pale reddish-brown in fruit. Stamens 1 to 3. Style deciduous, not enlarged at the base; stigmas 3 (rarely 2). Nut triquetrous, or lenticular in the few cases in which there are but 2 stigmas.

Herbs differing from those of the genus *Scirpus* only in the greatly exerted wool-like hypogynous bristles of the fruit.

The derivation of the name of this genus is from *ἔριον*, wool, and *φέρω*, I bear

SECTION I.—**TRICHOPHORUM.** *Pers.*

Spike solitary, terminal, erect, without leafy bracts at the base. Hypogynous bristles 4 to 6, crisped and flexuous when elongated after flowering.

SPECIES I.—**ERIOPHORUM ALPINUM.** *Linn.*

PLATE MDCIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXVIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1198.

Scarcely caespitose. Rootstock creeping, producing numerous stems closely placed one before the other. Stems slender, triangular, slightly rough on the angles, leafless; basal sheaths several, striate; the lower ones pointed and leafless, the uppermost one terminating in a short rough setaceous channelled and keeled lamina. Spike solitary, terminal, erect, few-flowered, without leafy bracts at the base, oblong-ob lanceolate* in fruit. Glumes lanceolate, obtuse, orange-brown,

* In describing the shape of the spike the bristles are taken into account in this and the other species of *Eriophorum*.

with pale edges; the two lower ones empty and larger, with green midribs, the lowest usually with a thickened midrib ending in a callous point. Hypogynous bristles 4 to 6, in fruit crisped and twice or thrice as long as the spike. Nut minute, obovate, rounded at the apex and mucronate, trigonous.

In spongy bogs in mountainous districts. Very rare. Formerly found in the Bog of Restennet, Forfar, but now lost through drainage; a single specimen was gathered in Durness, Sutherland, by Professor Balfour, in August 1827, and brought home by him as *Scirpus cæspitosus*, but it has not been collected in Scotland since that date. Said to have been found by Mr. H. J. Ryder on the north margin of Gurthambra Lake, 3 miles west of Mill Street, co. Cork, in 1866; but Mr. A. G. More sought for it there in vain in 1868, and Dr. D. Moore in 1869.

Scotland (extinct?). Perennial. Spring, early Summer.

A small plant which, when in flower, bears a most striking resemblance to *Scirpus cæspitosus*, but it may be at once known from that plant by its creeping rootstock, on which the stems are placed one before the other, as in *Juncus filiformis*; ultimately the stems are 4 to 10 inches high; the spike, without reckoning the hairs, about $\frac{1}{4}$ inch, including them, $\frac{3}{4}$ to 1 inch long. Nut very minute, dark brown.

Alpine Cotton Grass.

French, *Linaigrette des Alpes*. German, *Gebirgs Wollgras*.

SECTION II.—SERICOPHORUM. *Reich.*

Spike solitary, terminal, without leafy bracts at the base. Hypogynous bristles very numerous, straight.

SPECIES II.—**ERIOPHORUM VAGINATUM.** *Linn.*

PLATE MDCIV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXXIX. Fig. 686.

Billot, Fl. Gall. et Germ. Exsicc. No. 1561.

Densely cæspitose. Rootstock not creeping, producing stems and numerous radical leaves. Radical leaves wiry, narrowly linear, triquetrous, shorter than the stem. Stems rather slender, cylindrical below, obtusely trigonous towards the apex, with a tubular sheath, commencing about the middle of the stem, or more rarely below it, swollen and oblique at the apex, and without any laminae; basal sheaths with a

very short setaceous triquetrous lamina. Spike solitary, terminal, erect, many-flowered, without leafy bracts at the base, roundish-ovoid in fruit, tapering towards the apex. Glumes triangular, acute, black, with broad white scarious margins and apex. Hypogynous bristles very numerous, in fruit straight and twice or thrice as long as the glumes. Nut large, elliptical-oval, rounded at the apex, shortly mucronate, compressed-trigonal.

On damp heaths. Universally distributed, but rare in the south; becoming more abundant towards the north; and very common in the Scotch Highlands.

England, Scotland, Ireland. Perennial. Spring, early Summer.

Plant growing in roundish tufts, each consisting of many smaller tufts of radical leaves, from many of which are developed flowering stems 4 to 8 inches high in flower, and 6 to 20 in fruit. Spike $\frac{3}{4}$ to 1 inch long in flower, 1 to $1\frac{3}{4}$ inch in fruit. Nut fuscous, about $\frac{1}{8}$ inch long, flatish on the inside, convex with a prominent ridge on the back.

Hare's-tail Cotton Grass.

French, *Linaigrette à larges gaines*. German, *Scheidenförmiges Wollgras*.

Mr. Grindon says this and the Tassel Cotton Grass are two of the prettiest plants of the British Flora. While in bloom they are inconspicuous; but when in fruit the large silvery heads present a singularly beautiful spectacle, surfaces where it is abundant seeming, if viewed at a gentle incline upwards, as if covered with snow; while the glossy tassels, white as ermine, of the Tassel Grass dangling in graceful clusters from the tops of the grass-like stalks might well be cited in the romantic poetry ascribed to Ossian—

“Her bosom was whiter than the down of Casca.”

The desolate flat black moors of the north are enlivened by them for several weeks in early summer, and in the level light of the setting sun they shine like satin. No use can be made of the heads, which are “cotton” only in appearance, the hairs being straight and stiff.

SECTION III.—EU-ERIOPHORUM.

Spikes several, usually drooping in a terminal head or simple umbellato-corymbose panicle, which have several long leaflike bracts at the base. Hypogynous bristles very numerous, straight when elongated after flowering.

SPECIES III.—**ERIOPHORUM ANGUSTIFOLIUM.** *Roth.*

PLATES MDCV. MDCVI.

*Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXCI.**Billot, Fl. Gall. et Germ. Exsicc. No. 2950.**E. polystachium, "Linn." Bab. Man. Brit. Bot. ed. vi. p. 375.*

Not caespitose. Rootstock extensively creeping, producing stems and tufts of radical leaves at distant intervals. Radical leaves numerous, channelled, keeled, with a long triquetrous point, recurved. Stems rather slender, subcylindrical, solid, with 1 to 3 sheathing leaves, with the lamina resembling that of the radical leaves, or short and subulate-triquetrous. Spikes solitary, several (rarely solitary), more or less stalked and sessile, in a simple umbellate corymb, obconical-obovate and subtruncate at the apex in fruit. Peduncles glabrous, drooping. Bracts unequal, resembling the leaves; one or two of the lowest usually considerably longer than the largest peduncle. Glumes lanceolate-triangular, fuscous with broad white scarious margins and apex. Hypogynous bristles very numerous, in fruit straight and four or five times as long as the glumes. Nut narrowly elliptical, acuminate, mucronate, compressed-trigonous.

Var. α , *genuinum*.

PLATE MDCV.

E. angustifolium, Sm. Eng. Bot. No. 564.

Leaves rather narrow, channelled in the basal half, triquetrous in the apical half. Lowest bract longer than the spikes. Lower spikes on long stalks in fruit.

Var. β , *elatius*. Koch.

Leaves broad, slightly channelled in the basal portion, triquetrous for about the apical third or fourth part. Lowest bract longer than the spikes. Lower spikes on long stalks in fruit. Stems much stouter and taller than in var. α .

Var. γ , *minus*. Bab.

PLATE MDCVI.

E. gracile, Sm. Eng. Bot. ed. i. No. 2402 (non Koch).

Leaves very narrow, channelled towards the base, triquetrous in the apical half or two-thirds. Lowest bract often only as long as or even

shorter than the spikes. Lower spikes shortly stalked or subsessile in fruit. Stems more slender and smaller than in var. α .

In bogs and wet heaths. Common, and generally distributed. Var. γ on mountains.

England, Scotland, Ireland. Perennial. Spring, early Summer.

Rootstock extensively creeping, producing tufts of leaves surrounding flowering stems, and at the extremities of elongated stolons barren tufts of leaves. These radical leaves vary much in breadth: in var. α they are scarcely $\frac{1}{4}$ inch, in var. β they are sometimes nearly $\frac{1}{2}$ inch, and in var. γ barely $\frac{1}{8}$ inch. Stems 6 inches to 1 foot high in flower in var. α , and 12 to 15 inches in fruit: in var. β they are sometimes 2 feet high in fruit; in var. γ rarely above 6 or 8 inches. Fruiting spikes 1 to 2 inches long, rounded-truncate at the apex. Fruit about $\frac{1}{8}$ inch long, narrower than that of *E. vaginatum*, and less rounded at the apex.

Var. γ has the spikes sometimes reduced to 1, and the lowest bract very short; but it may at once be distinguished from *E. vaginatum* by its creeping rootstock, and by the uppermost sheath on the stem terminating in a lamina, though this is sometimes short and setaceous.

Common Cotton Grass.

French, *Linaigrette à pédoncules lisses*. German, *Schmalblüttriges Wollgras*.

The cotton-like down of this plant is used in moorland districts for stuffing pillows, but is too apt to absorb moisture and cake to be very good for such purposes. Attempts have been made to bring it into use as a substitute for cotton, and very tolerable thread has been spun from it; but the fibres are shorter and much more rigid than those of cotton, and do not bear twisting so well. Nevertheless, some very fine cloth was made a short time since, by a Mr. Helliwell, with this vegetable hair. It can be collected at a low cost, and it is very possible that it may eventually be applied to some useful purpose, especially as the boggy land on which it flourishes is worthless for any other species of cultivation. It has been suggested that paper might be made of it. Candle and lamp wicks are made of the down by country people. In former times the leaves and root were considered good as a medicine in diarrhoea, as they possess, in common with most of the family, considerable astringency.

SPECIES IV.—**ERIOPHORUM GRACILE.** Koch.

PLATE MDCVI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXC.

E. triquetrum, Hoppy. Reich. Fl. Germ. Excurs. p. 79.

Not caespitose. Rootstock extensively creeping, its branches producing stems at the apex. Radical leaves few, channelled, keeled, triquetrous, throughout. Stems slender, trigonous, solid, with 2 or 3

leaves in the lower half; the upper sheath with a very short subulate triquetrous lamina much shorter than its sheath. Spikes solitary, few, shortly stalked and sessile, in a simple umbellate corymb, obconical-obovate and subobtusate at the apex in fruit. Peduncles scabrous-puberulent, erect or inclined. Bracts unequal, the lowest one commonly with a short foliaceous point, considerably shorter than the longest peduncle. Glumes ovate-lanceolate, with subobtusate triangular points, blackish-olive, with pale midribs, without white scarious margins and apex. Hypogynous bristles very numerous, in fruit straight and five or six times as long as the glumes. Nut narrowly oblanceolate, rounded, not mucronate, compressed-trigonus.

In bogs. Very rare. Whitmoor Pond, halfway between Guildford and Woking, Surrey; Halmaby, Yorkshire, in a strip of boggy ground on the left-hand side of the road from Croft, discovered by J. Woods in 1835, and authenticated by W. Borrer in 1854.

England. Perennial. Early Summer.

Much more slender than *E. angustifolium*, and with the stems distinctly trigonous, 1 to 2 feet high. Radical leaves much narrower; stem leaves very short, the upper ones with a lamina $\frac{1}{2}$ to 1 inch long, and with much longer sheaths. Spikes fewer, more unequally stalked, fewer-flowered and much smaller, $\frac{1}{2}$ inch long in flower, 1 to $1\frac{1}{4}$ inch in fruit. Glumes much less triangular and blunter, greener, and without evident scarious margins. Nut smaller and narrower, more obtuse at the apex, and without a distinct mucro. Bristles absolutely shorter, but longer in proportion to the glumes and nut.

Of this plant I have never seen recent specimens.

Slender Cotton Grass.

French, *Linaiquette à péduncules pubescents*. German, *Schlankes Wollgras*.

SPECIES V.—**ERIOPHORUM LATIFOLIUM.** *Hoppe.*

PLATE MDCVIII.

Reich. Ic. Fl. Gall. et Germ. Exsicc. Vol. VIII. Tab. CCXCII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2951.

E. pubescens, Sm. Eng. Bot. Sup. No. 2633.

E. polystachium, Sm. Eng. Bot. ed. i. No. 563.

Cæspitose. Rootstock very shortly creeping, producing tufts of radical leaves and flowering stems. Radical leaves linear, flat, keeled, triangular for only a short distance at the apex. Stems rather stout, bluntly trigonous throughout, more decidedly so towards the apex hollow, with two or three leaves in the lower two-thirds, with the laminae broadly linear, flat, with a short triangular point, the

uppermost one about as long as its sheath. Spikes solitary or in pairs, numerous, stalked and sessile, in a simple or slightly compound umbellate corymb, obconical-obovate and subobtusate at the apex. Peduncles finely scabrous, inclined or drooping. Bracts unequal, foliaceous, the lowest one about as long as or shorter than the longest peduncle. Glumes elliptical-lanceolate, acute, blackish-olive, with narrow white scarious margins. Hypogynous bristles very numerous, in fruit straight and three or four times as long as the glumes. Nut oblanceolate, rounded at the apex, and very shortly mucronate, compressed-trigonus.

In bogs. Local, but widely distributed, extending from Devon and the Isle of Wight to Sutherland, but rare in the south of England and east of Scotland; most abundant in the north of England and south-west of Scotland. Very rare in Ireland, and found only in the middle and north-east.

England, Scotland, Ireland. Perennial. Early Summer.

E. latifolium is readily known from the other British species with many spikes, by its very shortly creeping rootstock and caespitose habit, and also by the broad flat leaves, triangular only at the point. The stems are 18 inches to 3 feet high; the spikes are about $\frac{1}{2}$ inch long in flower, and 1 or $1\frac{1}{4}$ inch in fruit, usually more numerous than in *E. angustifolium* or *E. gracile*, and with the bristles shorter in proportion to the glumes and nut than in the latter species, which it resembles in its roughened peduncles, but the roughness consists rather of short asperities than of hairs. The nut is reddish-brown and more distinctly mucronate than in *E. gracile*.

Downy-stalked Cotton Grass.

French, *Linaigrette à pédoncules rudes*. German, *Breitbültriges Wollgras*.

TRIBE III.—CARICEÆ.

Flowers all unisexual, monœcious, rarely diœcious.

GENUS VIII.—**KOBRESIA.** Willd.

Flowers unisexual, monœcious, arranged in spikelets which are few-flowered and disposed in a spike, which is simple, or compound at the base. Glumes of each spikelet 3 or 2, the lowest one largest and empty, the second of all the spikelets (or at least of the lowest) having a female flower in its axil, the third having a male flower, or empty and rudimentary; in one species the uppermost spikelets have the lower

glume empty, the second having a male flower in its axil, and the third flower absent. Male flowers with 3 stamens. Female flowers reduced to an ovary, with a single style and 3 stigmas, without hypogynous bristles. Nut triquetrous, sometimes compressed, without any perigynium.

Perennial herbs, differing from *Carex* only in the nut not being enclosed in a sac or perigynium.

Named after De Kobres of Augsburg.

SPECIES I.—**KOBRESIA CARICINA.** Willd.

PLATE MDCIX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CXCHII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2955.

Elyna caricina, Mert. & Koch; Kunth. Enum. Plant. Vol. II. p. 533.

Schœnus monoicus, Sm. Eng. Bot. No. 410.

Spikelets arranged in a compound spike. Each spikelet with only one perfect flower; the upper spikelets male, the lower female.

On wet moors. Very rare. On Cronkley Fell and Widdy Bank, Teesdale, in Yorkshire and Durham; Schroine-an-Lochan, Breadalbane, Perth. Possibly also on Ben More, Perth, as Mr. H. C. Watson gathered it somewhere on the Breadalbane mountains, and is inclined to think it was on Ben More.

England, Scotland. Perennial. Late Summer.

Cæspitose, growing in dense tufts. Radical leaves linear-setaceous, channelled, shorter than the stem, wiry, 2 to 6 inches long. Stems erect, rigid, cylindrical, striate, 2 to 9 inches high, terminated by a spike $\frac{3}{8}$ to $1\frac{1}{4}$ inch long, which is compound at the base. Glumes $\frac{1}{8}$ inch long, reddish-brown, with pale scarious margins, the lowest one in each spikelet empty, the second of the lower spikelets with a female flower, and the third rudimentary and without any flower. In the male spikelets the lowest glume is empty and the second and terminal one contains a male flower. The nut when not quite mature is lanceolate-acuminate, plano-convex, pale-yellowish. The ripe nut I have never seen.

Sedgeliike Kobresia.

French, *Kobrésie carex.*

GENUS IX.—**CAREX.** Linn.

Flowers unisexual, monœcious, very rarely diœcious, arranged in several- or many-flowered spikelets, which are disposed in a simple or

compound spike, or more rarely solitary, or the flowers in separate spikes arranged in a raceme. Glumes of each spikelet or spike usually numerous, imbricated all round the axis, all with flowers in their axils. Male and female flowers sometimes intermixed in the same spikelet or spike (*androgynous*), or sometimes with the male flowers in one spikelet and the female in another (*unisexual*). Male flowers with 3 stamens. Female flowers with an ovary enclosed in a sac, with a single deciduous style, having 2 or 3 stigmas. Nut triquetrous when there are 3 stigmas, lenticular when there are only 2; in either case enclosed in a sac (*fruit* or *perigynium*), which sometimes tightly fits the nut, at other times is loose and inflated, and has an entire or truncate or more or less deeply bidentate beak or point.

Perennial herbs, with the stems often triangular and the leaves generally grasslike. Spikelets variously disposed.

The name of this genus is derived from the Greek word *κείρω*, I shear or cut, in allusion to the sharp leaves.

SECTION I.—MONOSTACHYÆ.

Spike terminal, solitary, simple, unisexual or androgynous.

GROUP A.—DIOICÆ.*

Spikes diœcious, or rarely the male spike with a few female flowers at the base. Stigmas 2. Nut plano-convex. Bracts none.

SPECIES I.—*CAREX DIOICA*. *Linn.*

PLATE MDCX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CXCIV. Fig. 522.

Billot. Fl. Gall. et Germ. Exsicc. No. 2562.

Rootstock creeping, rarely subcaespitose, with elongate stolons. Stems erect, filiform, cylindrical, smooth. Leaves erect, short, sub-setaceous, semicylindrical, channelled above, rigid, smooth, deep green, not glaucous. Spike terminal, solitary, simple, diœcious, without a bract at the base. Male spike linear-cylindrical; glumes broadly lanceolate, subacute, fawn-coloured, with pale edges. Female spike ovoid; glumes oval subobtusely, shorter than the fruit, deciduous, reddish-

* In this difficult genus I have in the main used the divisions given by Dr. N. J. Andersson, in his "Plantæ Scandinaviæ."

brown, with pale margins. Fruit sessile, the upper ones erect, the lower spreading or slightly deflexed, dark brown, ovate-oval, flat on the face, convex on the back, with numerous rather strong ribs on both faces, gradually attenuated into a truncate rough-edged beak. Stigmas 2. Nut yellowish, oval, plano-convex, with a narrow elevated line round the margins.

In bogs and wet heaths. Rare in the south of England, and apparently absent from the south-west, but frequent in the north, and in Scotland, extending to Orkney and Shetland. Rather local in Ireland, where it is rare in the south, but not uncommon in the west and north.

England, Scotland, Ireland. Perennial. Early Summer.

Rootstock emitting slender stolons producing tufts of leaves similar to those on the base of the flowering stem. Leaves 1 to 4 inches long, very narrow, involute, so as to form half a cylinder, striate on the back. Flowering stems 2 inches to 1 foot high, very slender, deeply striate. Male spike $\frac{1}{2}$ to $\frac{3}{4}$ inch long; female spike $\frac{1}{4}$ to $\frac{1}{2}$ inch long. Fruit about $\frac{1}{6}$ inch long.

Professor Babington says, "sometimes the male spike has fruits at its base;" but this form I have not met with.

Creeping Diœcious Sedge.

French, *Carex dioïque*. German, *Zweihäusige Segge*.

SPECIES II.—**CAREX DAVALLIANA.** Sm.

PLATE MDCXI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CXCV. Fig. 523.

Billot, Fl. Gall. et Germ. Exsicc. No. 2152.

Rootstock densely caespitose, without elongate stolons. Stems erect, filiform, trigonous, rough towards the top. Leaves erect, short, subsetaceous, semicylindrical, channelled above, scarcely rigid, rough-edged towards the apex, bright green. Spike terminal, diœcious, solitary, simple, without a bract at the base. Male spike linear-cylindrical; glumes elliptical-lanceolate, acute, fawn-coloured, with pale edges. Female spike oblong; glumes ovate-acute, shorter than the fruit, deciduous, reddish-brown, with pale margins. Fruit sessile, the upper ones erect, the lower spreading or deflexed, reddish-brown, narrowly lanceolate, flat on the face, convex on the back, with numerous faint ribs on both faces, insensibly attenuated into a long truncate rough-edged beak. Stigmas 2. Nut yellowish, elliptical, plano-convex, with a narrow elevated line round the margins.

In wet meadows. Formerly found at Lansdown, near Bath, but now lost by drainage. All the other localities reported for it belong to *C. dioica*.

England (extinct). Perennial. Early Summer.

Very similar to *C. dioica*, but much more caespitose, and without the elongate stolons of that plant. Stems more triangular, and rough towards the apex, usually taller. Spikes larger; the female one $\frac{1}{2}$ to $\frac{3}{4}$ inch long: glumes paler and more acute. Fruit much longer (nearly $\frac{1}{5}$ inch), narrower, paler, more faintly nerved, and at length more deflexed than in *C. dioica*.

Tufted Dioecious Sedge.

French, *Carex de Daval*. German, *Daval'sche Segge*.

GROUP B.—PULICARES.

Spike terminal, solitary, simple, androgynous, male at the apex and female at the base. Stigmas 2. Nut plano-convex. Leaves setaceous, involute. Bracts none.

SPECIES III.—*CAREX PULICARIS*. *Lin.*

PLATE MDXCII. -

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CXCIV. Fig. 524.

Billot, Fl. Gall. et Germ. Exsicc. No. 2956.

Rootstock densely caespitose, without elongate stolons. Stems erect, filiform, cylindrical, smooth. Leaves erect, short, narrowly setaceous, involute, rather rigid, deep green, not glaucous, rough on the margins towards the apex. Spikes terminal, solitary, simple, androgynous, male at the apex, female towards the base, which has no bract. Glumes all lanceolate, acute, reddish-brown with pale margins, those of the female flowers rather broader, shorter than the fruit, deciduous. Fruit substipitate, at first erect, afterwards deflexed, dark brown, shining, elliptical, acuminate at each end, flattish on the face, very convex on the back, with a line round the margin, insensibly attenuated into a short notched smooth beak. Stigmas 2. Nut grey, oblong-elliptical, slightly biconvex.

In bogs. Common, and generally distributed, reaching north to Orkney and Shetland. Frequent and generally distributed in Ireland.

England, Scotland, Ireland. Perennial. Early Summer.

Plant growing in tufts, with from 2 to 20 flowering stems 3 to 9

inches high. Spike $\frac{1}{2}$ to 1 inch long. Female flowers 3 to 10. Fruit nearly $\frac{1}{4}$ inch long.

Sometimes the spike is almost entirely composed of female flowers, only 1 or 2 flowers at the apex being male.

Flea Sedge.

French, *Carex puce.* German, *Flohsamige Segge.*

GROUP C.—RUPESTRES.

Spikes terminal, solitary, simple, androgynous, male at the apex and female at the base. Stigmas 3. Glumes of the female flowers persistent. Fruit erect or spreading. Leaves nearly flat, except at the apex. Bracts none, or scarious and sometimes with a setaceous or short foliaceous point.

SPECIES IV.—**CAREX RUPESTRIS.** *All.*

PLATE MDXCHL.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CXCVIII. Fig. 551.

Billot, Fl. Gall. et Germ. Exsicc. No. 2754.

Rootstock creeping or shortly chordorrhizal,* with elongate stolons. Stems filiform, trigonous, erect or curved, slightly rough towards the apex. Leaves nearly as long as the stem, linear, flat, rigid, recurved, green, not glaucous, with triangular rough points. Spikes terminal, solitary, simple, androgynous, male towards the apex, female towards the base, cylindrical, with a glumelike bract at the base, having sometimes a short setaceous point. Glumes oval-ovate, subobtusely, those of the male flowers reddish-brown, those of the female flowers mucronate, darker brown, persistent, about as long as the fruit. Fruit substipitate, pale brown, always erect, lanceolate-elliptical, ovoid-trigonus, acuminate at each end, abruptly acuminate at the apex into a short subcylindrical smooth truncate beak. Nut pale, broadly-elliptical, trigonus.

On rocks and dry hillocks in alpine situations. Very local. Discovered in 1836, by Dr. Dickie, in Glen Callater: the plant grows in abundance on the east side of the waterfall in the Corrie of Loch Ceander, which opens out of Glen Callater; I have gathered it also

* I use the term *chordorrhizal*, as distinguished from creeping, in those cases where the lengthened rootstock produces numerous flowering stems one before the other from its sides, restricting the term creeping to where there is only 1 or rarely 2 flowering stems from each branch of the rootstock.

in Professor Balfour's station, on grassy hillocks on Little Craighindal, in company with *Astragalus alpinus*; I have specimens from Glen Dole, Clova. It is said to occur on Ben Lawers; and on low rocks by the roadside going northwards from the inn of Inch-na-duff (Sutherland), on the right hand, growing with *Carex capillaris*, according to the Rev. Churchhill Babington.

Scotland. Perennial. Late Summer, Autumn.

Rootstock much branched, each branch producing numerous flowering stems and barren tufts. Leaves generally withered at the apex by the time of flowering. Stems 2 to 8 inches high. Spike $\frac{1}{2}$ to 1 inch long, bearing some resemblance to that of *C. pulicaris* before the fruits of the latter are deflexed, but with a still greater resemblance to that of the foreign *Kobresia spicata*. Female flowers 2 to 6. Fruit $\frac{1}{5}$ inch long, often abortive in British specimens.

Rock Sedge.

French, *Carex des rochers*. German, *Felsen Segge*.

GROUP D.—LEUCOGLOCHIN.

Spikes simple, solitary, terminal, androgynous, male at the apex, female at the base. Stigmas 3. Glumes of the female flowers deciduous. Fruit deflexed. Leaves setaceous, involute. Bracts none.

SPECIES V.—**CAREX PAUCIFLORA.** *Lightf.*

PLATE MDCXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CXCVI. Fig. 526.

Billot, Fl. Gall. et Germ. Exsicc. No. 1562.

Rootstock creeping or very shortly chordorrhizal, with elongate stolons. Stems erect, filiform, trigonous, slightly rough towards the apex. Leaves nearly as long as the stem, setaceous, slightly rough towards the apex, pale green, slightly glaucous. Spikes terminal, solitary, simple, androgynous; male towards the apex, female towards the base, without a bract at the base. Glumes of the male flowers linear, those of the female flowers lanceolate; all acute, pale reddish-ochreous, with white margins, those of the female flowers deciduous, three-quarters as long as the fruit. Fruit fawn-coloured or ochreous, at length deflexed, linear fusiform, acuminate at each end, gradually attenuated into a subulate smooth beak. Stigmas 3. Nut yellowish, oval-ovoid, bluntly trigonous.

In bogs in mountainous districts. Rare, except in the Scotch

Highlands. In Yorkshire it occurs on the banks of the Derwent, near Lilla-cross, and in several boggy places between Whitford and Pickering; in Northumberland, in South Tynedale, in Muckle Moss, and in a peat bog between the "Twice-Brewed Ale" public house and Craglough: both these stations are less than 300 yards above the sea. It is said also to occur near Dumfries, where the altitude cannot be much greater. In the Scotch Highlands it is a common plant at an elevation of 500 to 700 yards above the sea.

England, Scotland. Perennial. Summer.

A very distinct species, with the flowering stems 2 to 18 inches high. In the small specimens the leaves are as long as or a little longer than the stems, but in the large ones they are considerably shorter. Male flowers 1 or 2; female 2 to 4. Fruit $\frac{1}{4}$ inch long, at first ascending, afterwards spreading, ultimately reflexed.

Few-flowered Sedge.

French, *Carex à quatre fleurs*. German, *Wenigblüthige Segge*.

SECTION II.—HOMOSTACHYÆ.

Spike compound or rarely decompound, continuous or rarely interrupted, composed of androgynous spikelets, or rarely of subunisexual spikelets.

GROUP E.—CHORDORRHIZÆ.

Rootstock chordorrhizal. Spikes brown, compound, continuous or nearly so, with a short setaceous or foliaceous-pointed bract at the base. Spikelets male at the apex, or occasionally some of them wholly male. Fruit sessile, ascending or spreading-ascending. Stigmas 2.

SPECIES VI.—**CAREX INCURVA.** *Lightf.*

PLATE MDCXV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CXCIX. Fig. 533.

Rootstock chordorrhizal, much branched, with elongate stolons. Stem generally curved, rather slender, subtrigonal, smooth. Leaves usually recurved, nearly as long as the stem, linear, semicylindrical, smooth, deep green, not glaucous. Spikes compound, capitate, roundish-pyramidal, continuous, with a glumelike bract at the base. Spikelets 3 to 6, ovoid, all with a few male flowers towards the apex.

Glumes of the female flowers deltoid-ovate, acute, the lower ones aristate, shorter than the fruit, brown, with pale scarious margins. Fruit pale brown, roundish-ovate, inflated, not ribbed, not winged, rather abruptly acuminate into a subulate smooth entire beak, about one-fourth as long as the fruit. Stigmas 2. Nut roundish-obovate, plano-convex.

On sandy seashores. Local, and apparently confined to the north-east coasts of Scotland from Forfar to Sutherland and Shetland. It has been reported from the counties of Haddington, Fife, and the Isle of Harris; but these localities require to be confirmed by reliable authority, though the plant is not unlikely to be found there.

Scotland. Perennial. Summer.

A well-marked species, with long much-branched creeping rhizomes producing flowering stems 1 to 6 inches long, which become curved after flowering. Spikes or heads $\frac{1}{4}$ to $\frac{3}{4}$ inch long, truncate at the base, tapering towards the apex, the bract often with a very short setaceous point. Fruit about $\frac{1}{6}$ inch long, with a raised line round the margins.

The only recent specimens of this species which I have seen were gathered by myself on the coast of Forfar.

In the specimens from the Alps the stem is straight, but it is curved in all the British examples which I have seen.

Curved Sedge.

SPECIES VII.—**CAREX DIVISA.** *Huds.*

PLATE MDCXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCV. Fig. 545.

Willd. Fl. Gall. et Germ. Exsicc. No. 2755.

Rootstock longly chordorrhizal, slightly branched, with short or elongate stolons. Stem erect, rather slender, wiry, erect, triangular, slightly rough on the angles in the upper half. Leaves nearly as long as the stem, narrowly linear, channelled, with triquetrous points, rough on the edges, green, very slightly glaucous. Spikes compound, sometimes subcapitate, ovoid and continuous, or oblong and interrupted below, with a foliaceous bract at the base, of variable length, often greatly overtopping the spike. Spikelets 3 to 10, ovate-fusiform, the lower ones with subfoliaceous bracts, all with a few male flowers at the apex. Glumes of the female flowers broadly ovate, acuminate-cuspidate or mucronate, as long as or longer than the fruit, shining brown, with paler margins and midrib. Fruit orange-brown, broadly ovate, plano-convex, faintly many-ribbed, not winged, abruptly acuminate into a bifid rough-edged beak about half as long as the fruit.

Stigmas 2. Nut yellowish-brown, elliptical-oval, acuminate at each end, plano-convex.

In meadows near the sea, and by the sides of brackish ditches. Not unfrequent in the south and south-east of England, but rare in the north, where it grows on the south-east coast of Yorkshire, the north-east of Lincoln, and in Flintshire. In Ireland it is very rare, but occurs on the side of a ditch in the marshes of the North Strand, Dublin.

England, Ireland. Perennial. Early Summer.

Rootstock tough, black, extensively creeping, producing numerous stems one before the other. Stems usually 1 foot to 18 inches high, but varying from 3 inches to 3 feet. Leaves chiefly in the lower part of the stem, slightly shining. Spike $\frac{1}{4}$ to $1\frac{1}{2}$ inch long, each of the spikelets of which it is composed with a bract at the base, the lowest bract foliaceous and generally as long as the spike, sometimes much longer, as I have seen specimens with it about 6 inches long: this bract has brownish auricles at the base, and is very rough on the edges and keel. Spikelets rather few-flowered, $\frac{1}{8}$ to $\frac{1}{2}$ inch long. Glumes with a more or less excurrent mucro, which often considerably exceeds the fruit. Fruit $\frac{1}{6}$ inch long, with a raised line round the margins.

Bracteated Marsh Sedge.

SPECIES VIII.—**CAREX DISTICHA.** *Huds.*

PLATE MDCXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCX. Fig. 552.

Billot, Fl. Gall. et Germ. Exsicc. No. 1565.

C. intermedia, Good. Sm. Engl. Bot. ed. i. No. 2042; and *Engl. Fl.* Vol. IV. p. 86.

Hook. & Arn. Brit. Fl. ed. viii. p. 506. *Kunth, Enum. Plant.* Vol. II. p. 376.

Reich. l.c. p. 8.

Rootstock longly chordorrhizal, with elongate stolons. Stems erect, tough, rather stout, triquetrous, rough on the edges in the upper half. Leaves nearly as long as the stem, broadly linear, channelled, with triquetrous points, rough on the edges, deep green, not glaucous. Spikes compound, oblong-ovoid or oblong-cylindrical, continuous or interrupted below, with a setaceous or short foliaceous bract at the base of variable length, but generally not overtopping the spike. Spikelets 6 to 20, ovate and fusiform, only the 2 or 3 lowest with a setaceous or foliaceous bract; the lower and upper ones nearly wholly female, and the intermediate ones usually entirely male. Glumes of the female flowers lanceolate, acuminate, and very acute, orange-brown, with paler margins and midrib, shorter than the fruit. Fruit yellowish-brown, ovate-lanceolate, plano-convex, many-ribbed, with a very

narrow wing on each side near the apex, gradually acuminate into a serrulate bifid beak, nearly as long as the rest of the fruit. Stigmas 2. Nut olive-yellow, ovate-elliptical, plano-convex.

In meadows, and by the sides of ditches and rivers. Not very common, but generally distributed from the south of England to the Grampians on the east, and Argyle on the west. Not unfrequent, and generally distributed in Ireland.

England, Scotland, Ireland. Perennial. Summer.

Rootstock extensively creeping, sending up numerous stems and tufts of leaves, often at considerable intervals. Stems 18 inches to 3 feet high, less wiry than in *C. divisa*. Leaves extending farther up the stem than in that species, broader, less rigid, and darker green. Bracts shorter and narrower. Spikes $\frac{3}{4}$ to 3 inches long; spikelets $\frac{1}{4}$ to $\frac{3}{4}$ inch long. Fruit rarely perfected, about $\frac{1}{6}$ inch long: frequently abortive, inflated, and then about $\frac{1}{4}$ inch long.

Mr. Bentham considers this as an inland form of *C. arenaria*, but he has probably not seen the perfect fruit, as a comparison of the ripe fruits of this and *C. arenaria* render such an opinion untenable.

Soft Brown Sedge.

French, *Carex à deux épis*. German, *Zweizeilige Segge*.

SPECIES IX.—**CAREX ARENARIA.** *Linn.*

PLATE MDCXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLIX.

Billot, Fl. Gall. et Germ. Exsicc. No. 1971.

Rootstock longly chordorrhizal, elongate stolons. Stems erect in flower, slightly curved in fruit, tough, slender, triquetrous, rough towards the apex. Leaves as long as or longer than the stem, broadly linear, channelled, with triquetrous points, rough on the edges, deep green, not glaucous. Spikes compound, lanceolate-oblong, continuous or slightly interrupted below, with a foliaceous bract at the base, usually shorter than the spike. Spikelets 6 to 20, roundish-ovoid and fusiform, only 2 or 3 of the lower ones with a short setaceous or foliaceous bract, the lower ones wholly female, the intermediate ones female, with a few male flowers at the apex, the upper ones commonly entirely male. Glumes of the female flowers ovate-lanceolate, acuminate and shortly mucronate, reddish-brown, with paler margins and greenish midribs, equalling or slightly exceeding the fruit. Fruit yellowish-brown, ovate-lanceolate, plano-convex, many-nerved, with a broad green serrulate wing on each side extending from the middle

of the fruit to the apex of the beak, gradually acuminate into a deeply bifid beak nearly as long as the rest of the fruit. Stigmas 2. Nut pale olive-yellow, ovate-elliptical, plano-convex.

On sandy seashores. Common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer.

A well-marked species, with the rootstock running in the sand often for a yard or more, and marking its position by the tufts of leaves and flowering stems which it sends up at intervals. Stems 3 inches to 1 foot high, leafy only at the point where they emerge from the sand, erect while in flower, but curved when the fruit is fully formed. Leaves darker green and much more rigid and recurved than in *C. disticha*. Spikes 1 to 3 inches long. Female spikelets $\frac{1}{4}$ to $\frac{1}{2}$ inch long. Fruit nearly $\frac{1}{4}$ inch long, remarkable for the broad wing which runs down each side, commencing about the middle and gradually losing itself in the deeply bifid beak.

Of this plant there is said to be a variety, *C. Witheringii* of Gray, in which the rootstock is not creeping. This I have never seen: is it not merely a tuft which has been broken off in digging up the plant when the rootstock was at greater depth than usual?

Sea Sedge.

French, *Carex des sables*. German, *Sand-Segge*.

GROUP F.—PANICULATÆ.

Rootstock cæspitose. Spikes brown, more or less decompound, continuous or slightly interrupted below. Bracts short, only the lowest with a setaceous herbaceous point. Spikelets male at the apex. Fruit shortly stipitate, ascending-spreading. Stigmas 2.

SPECIES X.—*CAREX TERETIUSCULA*. Good.

PLATES MDCXIX. MDCXX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXII. Fig. 572.

Rootstock very shortly creeping, oblique, scarcely cæspitose, growing in small tufts, without elongate stolons. Stems slender, wiry, trigonous, sometimes triquetrous above, rough in the upper part. Leaves as long as the stem, narrowly linear, channelled, rough on the edges, green, not glaucous. Spikes slightly decompound, oblong or ovoid-oblong, continuous, rarely slightly interrupted below, with a bract at the base, having a short setaceous herbaceous point usually rather shorter than the lowest spikelet. Spikelets 5 to 8, ovoid, very slightly compound and simple, only the lowest with a short foliaceous bract,

male at the apex* and female below. Glumes of the female flowers ovate, acute, brown, with narrow paler margins, shorter than the fruit. Fruit reddish-brown, green on the margins towards the apex, shortly stipitate, truncate-rounded at the base, ovate-lanceolate, flattish on the face, where there are no ribs, greatly swollen on the back, where there are two strong and sometimes two other fainter widely separated ribs, gradually acuminate into a flattened 2-toothed beak, nearly as long as the rest of the fruit, with slightly winged serrulate margins. Style not thickened at the base; stigmas 2. Nut pale yellowish-brown, obovate-oval, plano-convex.

Var. α , *genuina*.

PLATE MDCXIX.

Flowering stems few, triangular but not triquetrous towards the top. Spike dense, continuous, composed of simple spikelets, except at the base.

Var. β , *Ehrhartiana*.

PLATE MDCXX.

C. Ehrhartiana, Hoppe, test. Koch.

C. Pseudo-paradoxa, Samuel Gibson, in Phytol. Ser. i. Vol. I. p. 778.

Stems more numerous in each tuft, triquetrous above. Spike longer, somewhat interrupted below, the lower spikelets usually more compound than in var. α .

In marshes and wet meadows. Rather rare, but pretty generally distributed in England and the south of Scotland, reaching north to Moray and Lanark. Rather rare in Ireland, and chiefly found in the north and west. Var. β in Seaman's Moss Pits and Hale Moss, Manchester: in the "Cybele Britannica" Mr. H. C. Watson states: "If I rightly know that variety, it occurred on Wimbledon Common, some few years ago, in a drying-up swamp."

England, Scotland, Ireland. Perennial. Summer.

Var. α has the rootstock very shortly creeping, producing small tufts with rarely more than 3 or 4 flowering stems and a few barren leafy shoots. Stem 1 to 2 feet high, slender and rather wiry. Spike $\frac{3}{4}$ to 1 inch long. Spikelets about $\frac{1}{4}$ inch long, the lowest ones not much longer than the uppermost. Fruit $\frac{1}{8}$ inch long, with a subhemi-

* In the species of *Carex* with compound spikelets the disposition of the flowers is described from what it is in simple spikelets, or the ultimate spikelets of the compound ones.

spherical hump on the back towards the base, on which there are 2 to 4 ribs.

Var. β , for specimens of which I am indebted to Mr. J. Sidebotham, differs only in having the stems more numerous from each root, more triquetrous above, the spike longer, 1 to $1\frac{1}{2}$ inch, and the lower spikelets frequently compound.

Lesser Panicked Sedge.

French, *Carex arrondi*. German, *Rundliche Segge*.

SPECIES XI.—**CAREX PARADOXA.** *Wald.*

PLATE MDCXXI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXII. Fig. 573.

Dillot, Fl. Gall. et Germ. Exsicc. No. 678.

Rootstock densely caespitose, growing in large tufts, without elongate stolons. Stems slender, wiry, trigonous, rough in the upper part. Leaves as long as the stem, narrowly linear, channelled, rough on the edges, green, not glaucous. Spikes usually slightly decomposed, rarely greatly compound, ovoid or fusiform, continuous or interrupted below, with a bract at the base having a short setaceous herbaceous point usually much shorter than the lowest spikelet. Spikelets 5 to 8, fusiform or cylindrical, usually slightly compound towards the base, only the lowest spikelet with a short herbaceous bract, all of them male at the apex and female below. Glumes of the female flowers ovate, acuminate, reddish-brown with narrow pale margins, about as long as the fruit. Fruit chestnut-brown, green on the margins towards the apex, paler on the beak, shortly stipitate, ovate-truncate at the base, greatly swollen on the back, where there are 7 to 9 short ribs, slightly convex on the face, where there are 5 to 7 short ribs, rather abruptly acuminate into a flattened 2-toothed beak, as long as the rest of the fruit and serrulate on the margins, but not winged. Styles slightly thickened towards the base; stigmas 2. Nut brown, rhomboidal-ovoid, doubly convex.

In wet bogs. Very local. At Hoveton, Norfolk; and in Yorkshire, where it is plentiful in Askham bogs and in a carr between Healaugh and Askham Richard. In Ireland it is plentiful in the boggy wood at Ladiston, on the shore of Belvedere Lake, near Mullingar, co. Westmeath.

England, Ireland. Perennial. Summer.

Much more densely tufted than *C. teretiuscula*, and with more numerous black sheaths at the base of each stem. Stems similar but usually taller, being commonly 2 to 3 feet high. Spikes longer, 1 to 3

inches, more chestnut in colour, more decomposed, the lowest spikelet commonly $\frac{1}{2}$ to 1 inch long, and frequently interrupted. Fruit similar, but more swollen, more truncate at the base, and with more numerous short ribs, much less distinctly winged along the edges of the beak. Nut darker brown, much broader at the base, and much less compressed and with the base of the style slightly thickened.

Paradoxical Sedge.

French, *Carex changeant*. German, *Abweichende Segge*.

SPECIES XII.—**CAREX PANICULATA.** *Linn.*

PLATE MDCXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2756.

Rootstock very densely caespitose, growing in large often elevated tussocks, without elongated stolons. Stems stout, stiff, sharply triangular, very rough in the upper part. Leaves as long as the stem, linear, channelled, rough on the edges, green, not glaucous. Spikes usually very decomposed (rarely slightly decomposed), ovoid or fusiform or cylindrical-fusiform, commonly interrupted below, with a bract at the base having a short setaceous herbaceous point usually much shorter than the lowest spikelet. Spikelets 8 to 14, ovoid or cylindrical, usually compound towards the base, only the lowest spikelet with a short herbaceous bract, male at the apex and female below. Glumes of the female flowers ovate-acuminate, reddish-brown with broad white scarious margins, about as long as the fruit. Fruit dark brown with green margins, paler on the beak, shortly stipitate, triangular-ovate, truncate at the base, swollen on the back, where there are numerous faint ribs, flattish on the face, where there are 3 to 5 short ribs, rather abruptly acuminate into a flattish bifid beak as long as the rest of the fruit and with broadly-winged serrulate margins. Style thickened at the base; stigmas 2. Nut light brown, obovate, plano-convex.

In marshes and wet thickets. Not very common, but distributed from Cornwall and Kent to Orkney, and from the north to the south of Ireland.

England, Scotland, Ireland. Perennial. Summer.

A much larger and coarser plant than *C. teretiuscula* and *C. paradoxa*, which Mr. Bentham joins to the present species. *C. paniculata* grows in large dense tufts, producing very numerous stems; these tufts frequently become elevated 1 foot or more above the surface of

the ground, the persistent fuscous scales which are at the base of the stems forming a sort of cushion. Stems stout, 1 to 4 feet high, with flat not convex sides as in *C. teretiuseula* and *C. paradoxa*. Leaves much broader and rougher. Spike commonly 3 to 6 inches long, much more compound, and with the lower spikelets, often 1 or 2 inches long, compound and greatly interrupted. Bracts with much broader and more silvery scarious margins, which give a paler aspect to the spikelets. Fruit about the same size as that of *C. teretiuseula*, but more truncate at the base, less gibbous on the back, more broadly winged and with many more short ribs. From *C. paradoxa* the fruit differs in being of a duller brown, much less swollen, with the ribs far less distinct, and having a more conspicuous wing. The nut resembles that of *C. teretiuseula* much more than the remarkable one of *C. paradoxa*, but is more attenuated below.

In weak specimens the spike becomes almost compound, with the spikelets short, ovoid, and separated; in this state bearing a considerable resemblance to *C. Bönninghausiana*.

Greater Panicked Sedge.

French, *Carex paniculé*. German, *Rispige Segge*.

GROUP G.—MURICATÆ.

Rootstock caespitose. Spikes green or yellowish, compound or slightly decompound, continuous or interrupted. Bracts short, only a few of the lowest with setaceous herbaceous points. Spikelets male at the apex, female at the base. Fruit subsessile, spreading, with a long beak. Stigmas 2. Nut plano-convex.

SPECIES XIII.—**CAREX VULPINA.** *Linn.*

PLATE MDCXXIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2363.

Rootstock densely caespitose, without elongated stolons. Stems stout, stiff, ascending, triquetrous, very rough in the upper part. Leaves shorter than the stem, broadly linear, acuminate, flat,* rough on the midrib and margins towards the apex, pale green but not glaucous. Spikes slightly decompound, oblong-cylindrical, continuous or slightly interrupted below, with a bract at the base having a setaceous herbaceous point as long as or shorter than the spike. Spikelets

* The term "flat" is here applied to the leaves of those *Carexes* in which the margins are deflexed or flat, for in all the British species there is a central furrow.

6 to 12, roundish-ovate, the lower ones usually compound, male at the apex and female below, a few of the lower ones with short setaceous bracts. Glumes of the female flowers lanceolate-ovate, acuminate-cuspidate, fawn-coloured with a green midrib, shorter than the fruit. Fruit sessile, spreading, yellowish- or brownish-olive, ovate-triangular, truncate at the base, plano-convex, with 3 long and numerous short ribs on the back, and numerous short ribs on the face, gradually acuminate into a rough edged bifid beak as long as the rest of the fruit. Style thickened upwards; stigmas 2. Nut pale reddish-brown, broadly ovate, plano-convex.

In marshes and wet woods, and especially by the sides of brackish ditches or pools. Common, and generally distributed in England. Confined to the coast in Scotland, where it is more rare, and does not extend to the extreme north. Not common in Ireland, and chiefly found in the neighbourhood of the coast, and apparently more common on the east than on the west side of the island.

England, Scotland, Ireland. Perennial. Summer.

Stems numerous, 18 inches to 3 feet high or more, with the faces concave and the angles very rough towards the apex. Leaves $\frac{1}{4}$ inch broad or more. Spike 1 to 3 inches long. Fruit $\frac{1}{3}$ inch long.

Great Sedge.

French, *Carex compacte*. German, *Fuchsbraune Segge*.

SPECIES XIV.—**CAREX MURICATA.** *Linn.*

PLATE MDCXXIV.

Rootstock densely caespitose, without elongated stolons. Stems slender, rather wiry, erect or arching, trigonous or triangular, rough in the upper part. Leaves shorter than the stem, narrowly linear, nearly flat, rough on the margins towards the apex, deep green, not glaucous. Spikes compound or slightly decompound, oblong or cylindrical, continuous or interrupted below, with a bract at the base having a foliaceous point commonly much shorter than the spike. Spikelets 3 to 12, roundish-ovoid, simple (or rarely compound), male at the apex, female below, only the lowest with a foliaceous bract. Glumes of the female flowers ovate, acute or cuspidate, straw-coloured or very pale green, shorter than the fruit. Fruit sessile, spreading, olive-brown or greyish-green, ovate-oval, attenuated at the base, plano-convex, with numerous short faint ribs on the back, and a few very short ones on the face, rather gradually acuminate into a deeply

bifid rough-edged beak, about half as long as the rest of the fruit. Style cylindrical; stigmas 2. Nut olive-brown, roundish-oval, plano-convex.

SUB-SPECIES I.—*Carex eu-muricata*.

PLATE MDCXXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXV.

Billot, Fl. Gall. et Germ. Exsicc. No. 2958.

C. muricata, Auct. Plur.

Stem erect, stiff. Spike continuous or more rarely interrupted below. Spikelets 3 to 8. Glumes brownish, with green keels, rarely pale. Fruit divaricate, with a serrulate beak.

Var. α , *compacta*.

Spikes continuous. Glumes brown, with a green keel.

Var. β , *Pseudo-divulsa*.

C. divulsa, Gaud. Fl. Helv. Vol. VI. p. 47, teste Koch (non Good.).

C. muricata, var. virens, Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 866.

C. virens, Lam. Dict. Vol. III. p. 348, teste Gren. & Godr. (non Reich.).

Spikes greatly interrupted below. Glumes paler and greener than in var. α .

In meadows and woods, on grassy banks, and by roadsides. Rather common throughout England; more rare in Scotland, and not reaching the extreme north of that country. Rare in Ireland, and not found in the north of the island. Var. β is not unfrequent in Kent and Surrey, and I have specimens from Bath, collected by the late Mr. R. Withers.

England, Scotland, Ireland. Perennial. Early Summer.

Rootstock densely tufted, producing numerous stems 9 inches to 2 feet high. Leaves about $\frac{1}{8}$ inch broad, sometimes rough on the upper side. Spike $\frac{3}{4}$ inch to $1\frac{1}{2}$ inch long in var. α , but frequently 2 or even 3 inches in var. β , consisting usually of 4 to 7 spikelets, of which the lower ones are sometimes slightly compound, especially in var. β . Fruit $\frac{1}{5}$ inch long, rather variable in shape, in var. β usually larger than in var. α .

Sometimes the lowest bract is longer than the spike when it is the var. *virens* of Reichenbach, but according to Koch and Grenier and Godron, Lamarck's *C. virens* is the var. β described above.

Greater Prickly Sedge.

French, *Carex des haies*. German, *Sperrfrüchtige Segge*.

SUB-SPECIES II.—*Carex divulsa*. Good.

PLATE MDCXXV.

*Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXX. Fig. 570.**Billot, Fl. Gall. et Germ. Exsicc. No. 1775.*

Stems arching, rather weak. Spike greatly interrupted. Spikelets 5 to 12. Glumes greenish-white with green keels. Fruit spreading-ascending, with a slightly scabrous beak.

On hedgebanks and in woods. Not uncommon in England, at least in the south, extending north to Denbigh and Yorkshire. Given by Professor Babington as a native of Scotland; but I have seen no Scotch specimens, and doubt its occurrence there. Very local and rare in Ireland, where it is confined to the south and east of the island.

England, Scotland?, Ireland. Perennial. Summer.

Very similar to *C. eu-muricata*, var. β , but more slender, with the stems weaker, the spike longer (2 to 6 inches), with more numerous and smaller spikelets, the lowest one more often compound; the glumes greener; fruit generally greyish-olive, not brown, smaller ($\frac{1}{6}$ inch), less spreading, and with the beak much less rough. I can see no difference in the shape of the nut.

Grey Sedge.

French, *Carex interrompu*. German, *Zerrissene Segge*.

GROUP H.—STELLULATÆ.

Rootstock caespitose. Spikes green or yellowish, slightly interrupted. Bracts short, only the lowest one setaceous herbaceous. Spikelets male at the base, female at the apex. Fruit spreading sessile, commonly corky at the base, margined, with a long 2-toothed beak. Stigmas 2; nut plano-convex or lenticular.

SPECIES XV.—*CAREX STELLULATA*. Good.

PLATE MDCXXVI.

*Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXIV. Fig. 360.**C. echinata, Murr. Gren. & Godr. Fl. de Fr. Vol. III. p. 398. Parl. Fl. Ital. Vol. II. p. 147.*

Rootstock densely caespitose, without elongated stolons. Stems slender, ascending, trigonous, nearly smooth. Leaves shorter than the stem, narrowly linear, channelled, rough on the margins towards

the apex, bright green, not glaucous. Spike compound, oblong-cylindrical, usually slightly interrupted, with a bract at the base which has either no setaceous point or one much shorter than the spike. Spikelets 3 to 5, simple, roundish, male below, female at the apex. Glumes of the female flowers ovate, acute, pale olive with a green nerve (rarely brownish with a green nerve), shorter than the fruit. Fruit sessile, spreading-divaricate, olive, rounded and spongy at the base, plano-convex, and a few faint short ribs on the back, but none on the face, except the strong marginal ones which run into the beak, rather gradually acuminate into a 2-toothed roughish-edged beak rather shorter than the rest of the fruit. Stigmas 2. Nut pale olive, rhomboidal-oval, lenticular.

In bogs. Common, and generally distributed.

England, Scotland, Ireland. Perennial. Summer.

Stems numerous, 3 to 18 inches high. Spikes $\frac{3}{4}$ to 1 inch long, composed of from 3 to 5 spikelets about $\frac{1}{4}$ inch long. Fruit $\frac{1}{8}$ inch long, with the beak deflexed.

The form with brownish glumes (var. *brunescens*, *Fries.*) I have gathered on Ben Lawers, but it scarcely deserves to be termed a variety.

C. stellulata resembles *C. muricata* in miniature, but may be distinguished when in flower by the male flowers being at the base instead of the apex of the spikelets, and the bracts much shorter, even the lowest one being often not foliaceous. In fruit it may be known by the spikelets being fewer, and the fruit smaller, rounded and corky at the base, with a more deflexed and less deeply bifid beak, and with a much more strongly marked marginal rib down each side.

Little Prickly Sedge.

French, *Carex étoilé.* German, *Sternförmige Segge.*

GROUP I. REMOTÆ.

Rootstock caespitose. Spikes greatly interrupted. Bracts long, foliaceous, the lowest one commonly exceeding the spike. Spikelets pale green or pale brown, distant, especially at the base of the spike, male at the base, female in the middle and apex, or sometimes again male at the apex. Fruit ascending, sessile or substipitate, with a long 2-toothed beak. Stigmas 2.

SPECIES XVI.--**CAREX REMOTA.** *Linn.*

PLATE MDCXXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXII.*Billot.* Fl. Gall. et Germ. Exsicc. No. 867.

Rootstock densely caespitose, with very shortly creeping chordorhizal branches, but no elongate stolons. Stems slender, weak, bluntly trigonous, smooth, or sometimes very slightly roughened, immediately below the spike. Leaves about as long as the stem, narrowly linear, very slightly channelled, slightly rough on the margins towards the apex, pale bright green, not glaucous. Spike long, compound, greatly interrupted, especially below, with a foliaceous bract at the base exceeding the spike. Spikelets 3 to 10, ovate-fusiform, simple, male at the base, female at the middle and apex, 3 or 4 of the lowest spikelets with long foliaceous bracts. Glumes of the female flowers oval-lanceolate, acute, very pale greenish, with a green keel and broad pure white scarious margins, shorter than the fruit. Fruit pale-olive, adpressed-ascending, elliptical-lanceolate, attenuated at the base, plano-convex, with 3 to 7 fine ribs on the back, and about 3 very faint ones on the face, rather abruptly acuminate into a roughish-edged bifid beak, not half the length of the fruit. Nut whitish, ovate-oval, apiculate, plano-convex.

In moist woods and on hedgebanks. Rather frequent throughout England. More rare in Scotland, and not extending to the extreme north. Not unfrequent, but widely distributed in Ireland.

England, Scotland, Ireland. Perennial. Summer.

Stems very numerous, growing in dense tufts; the branches of the rootstock producing several stems one before the other, so that technically the species is chordorrhizal, though from the extreme closeness of the stems this is not readily noticeable. Stems weak, arching, 1 to 2 feet high, with two of the angles more rounded off than is usual in the genus. The rachis of the panicle usually the only part which is rough. Leaves very narrow, not above $\frac{1}{2}$ inch broad. Spikes 3 to 6 inches long, with 3 to 8 spikelets, the lower ones very distant and with remarkably long foliaceous bracts. Fruit about $\frac{1}{6}$ inch long.

Carex tenella (*Sm.* Engl. Fl. vol. xiv. p. 83, non *Schkur.*) is said to be a starved state of *C. remota*. I have a plant from Fareham, Hants, collected by Dr. Macreight, which evidently belongs to *C. remota*, and appears to agree with Smith's description of his *C. tenella*,

from the side of the Esk, Forfarshire, in everything except that the stems are more than 1 foot high, instead of a "span."

Distant-spiked Sedge.

French, *Carex espacé*. German, *Entferntührike Segge*.

SPECIES XVII.—**CAREX AXILLARIS.** *Good.*

PLATE MDCXXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCIX. Fig. 567.

Rootstock densely caespitose, with very shortly creeping chordorhizal branches, but no elongate stolons. Stems rather slender, rather stiff, acutely triangular, very rough below the spike. Leaves about as long as the stem, linear, nearly flat, rough on the margins towards the apex, bright pale green, not glaucous. Spike very long, decompound, greatly interrupted below, with a foliaceous bract at the base usually much exceeding the spike. Spikelets 5 to 12, ovate-ovoid, the lower ones digitately compound, the upper simple, all male at the base or at the base and apex, female in the middle or at the middle and apex, only 2 or 3 of the lowest spikelets with long foliaceous bracts. Glumes of the female flowers ovate, acute, generally mucronate, very pale greenish-olive, with a green midrib, nearly as long as the fruit. Fruit pale olive, erect-ascending, substipitate, lanceolate, plano-convex, with 3 to 5 fine ribs on the back, and about 3 very indistinct ones on the face, rather abruptly acuminate into a rough-edged bifid beak not half the length of the rest of the fruit. Nut whitish, ovate-oval, apiculate, plano-convex.

In hedgebanks and damp meadows. Rare, but widely distributed in England, as far north as Yorkshire. Very rare in Ireland, where it occurs on the south and east of that island.

England, Ireland. Perennial. Summer.

Very similar to *C. remota*, in company with which it is commonly found. It is, however, a stouter plant, with more rigid and usually taller stems, with much sharper and rougher angles; the lowest or 2 or 3 of the lowest spikelets digitately compound, and sometimes the spikelets are as many as 10 or 12; all the bracts, except the lowest, usually shorter than in *C. remota*, which it resembles in the fruit, except that the beak of the fruit in *C. axillaris* is much rougher, and the base attenuated into a very short stalk. The nut has not been perfectly matured in any of the specimens which I have examined; but I have collected the species only once, on the hedgebank of a grassy lane leading from Wimbledon Common, near the Camp, to the Roehampton Road, and have not been able to obtain the species to cultivate.

M. Crepin (in the fourth fasciculus of his notes, p. 49) considers this as a hybrid between *C. remota* and *C. vulpina*, while other authors regard it as a hybrid between *C. remota* and *C. muricata*.

Axillary Sedge.

German, *Seitenständige Segge*.

SPECIES XVIII.—**CAREX BOENNINGHAUSIANA.** *Weike*.

PLATE MDCXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXIX. Fig. 568.

C. remota-paniculata, Goecke, Fl. von Nord- und Mittel-Deutschland, ed. vi. p. 421.

Rootstock very densely caespitose, with very shortly creeping chorrorrhizal branches, but no elongate stolons. Stems slender, stiff, acutely triangular, very rough below the spike. Leaves about as long as the stem, linear, channelled, very rough on the margins towards the apex, bright deep green, not glaucous. Spike very long, decompound, greatly interrupted below, with a foliaceous bract at the base usually equalling or slightly exceeding the spike. Spikelets 6 to 15, fusiform, the lower ones spicately compound, the upper simple, all male at the base or at the base and apex, female in the middle or at the middle and apex, except the uppermost ones, which are often wholly male; the lowest or only 1 or 2 of the lowest spikelets with long foliaceous bracts. Glumes of the female flowers ovate, acute, pale reddish-brown with broad white scarious margins, as long as the fruit. Fruit erect, pale brown, substipitate, lanceolate, plano-convex, with 3 to 5 slender ribs on the back and numerous faint ones on the face, rather gradually acuminate into a rough-edged shortly-bifid beak not half the length of the rest of the fruit. Nut "ovate-elliptical" (*Bab.*).

In woods and by the margins of ponds. Rare. Qunarr Copse, Isle of Wight; Tunbridge Wells, Kent; Hastings and Pulborough, Sussex; Esher, Surrey; Balls Wood, Herts; Congleton, Cheshire (?); Crichton Castle, Edinburgh; Killin, Perth; Gordon Castle, Banff.

England, Scotland. Perennial. Summer.

A puzzling plant, bearing much resemblance to *C. axillaris*, especially in the dried state, but it grows in denser tufts, the stems are more slender and rigid, the leaves darker green, more evidently channelled, the spike longer; the lower spikelets in both plants are compound, but in *C. axillaris* the primary spikelet has several smaller secondary ones at its base; while in *C. Bönninghausiana* the secondary spikelets are placed on the rachis, one above the other, the primary spikelet being consequently much longer. In *C. Bönninghausiana* the glumes are browner than in *C. axillaris*, with well-marked white

scarious margins, and are longer in proportion to the fruit, which appears to be very rarely perfected, as I have never seen a specimen of which the nut was full grown.

I have very little doubt of this being a hybrid between *C. paniculata* and *C. remota*.

Bönninghausen's Sedge.

German, *Zittergrasartige Segge.*

GROUP J.—HELEONASTES.

Rootstock cæspitose. Spike very slightly interrupted. Bracts minute, not herbaceous, or if so much shorter than the spike. Spikelets yellowish or reddish-brown, male at the base, female at the apex. Fruit ascending or spreading-ascending, sessile, with a long or rather long entire or slightly bidentate beak, not winged. Stigmas 2.

SPECIES XIX.—*CAREX ELONGATA*. *Linn.*

PLATE MDCXXX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXVIII. Fig. 565.

Billot, Fl. Gall. et Germ. Exsicc. No. 1566.

Rootstock very densely cæspitose, without stolons. Stems ascending-erect, slender, stiff, triquetrous, rough below the spike. Leaves rather longer than the stem, erect, linear, flat, rough on the margins, pale green, not glaucous. Spike rather short, compound, slightly interrupted below, without a foliaceous bract at the base. Spikelets 6 to 14, elliptical or oblong-ovoid, simple, all male at the base, with scarious bracts. Glumes of the female flowers very broadly ovate, acute or mucronate, reddish-brown with a green midrib and narrow white scarious margins, much shorter than the fruit. Fruit yellowish-olive, ultimately dull olive-brown, spreading-ascending, sessile, elliptical-lanceolate, slightly bi-convex, attenuated at the base, with numerous strong ribs on each face, rather gradually acuminate into a slightly deflexed triangular-subulate rough-edged entire beak about half as long as the rest of the fruit. Stigmas 2. Nut pale yellowish, oval, obtuse at each end, plano-convex.

In wet meadows and boggy woods. Rare. Weybridge, Surrey; near Coggeshall, Essex; Colemere, Salop; Over-Holford and Tabley, Cheshire; near Manchester, Lancaster; near Rotherham and Langwith; near York, Yorkshire. On the shores of Lough Neagh, Antrim.

England, Ireland. Perennial. Summer.

Stem 1 to 2 feet high. Spike $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, with 7 to 12 spikelets $\frac{1}{4}$ to $\frac{1}{2}$ inch long. Fruit $\frac{1}{6}$ inch long, remarkable for its numerous strong ribs, and tapering, slightly deflexed, and nearly entire beak.

An alpine variety has been distinguished under the name *C. Gebhardi*, *Schkuhr* (*Kunth*, Enum. Plant. vol. ii. p. 402). This has the spikelets fewer-flowered, and consequently considerably shorter than in the typical form. Professor Babington includes it in his Manual, but gives no station for it, and I have seen no British specimens.

Elongated Sedge.

French, *Carex alongé*. German, *Verlängerte Segge*.

SPECIES XX.—**CAREX LAGOPINA.** *Wahl.*

PLATE MDCXXXIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCIV. Fig. 543.

C. leporina, "*Linn.*" *Schkuhr*, Eng. Bot. Suppl. No. 2815. *Hook. & Arn. Brit. Fl.* ed. viii. p. 502. *Kunth*, Enum. Pl. Vol. II. p. 393.

Rootstock thinly caespitose, with short stolons. Stems decumbent-ascending, usually curved below, very slender, wiry, triangular, slightly rough immediately under the spike. Leaves much shorter than the stem, recurved-erect, narrowly linear, flat, slightly rough on the margins at the apex, deep bright green, not glaucous. Spike very short, compound, not interrupted, without a foliaceous bract of the base. Spikelets 2 to 4, ovoid or ovoid-fusiform, simple, male at the base, with scarious bracts. Glumes of the female flowers broadly-ovate, acute or mucronate, dark reddish-brown, with yellowish keels and very narrow white scarious margins, a little shorter than the fruit. Fruit reddish-brown, ascending, sessile, oval-elliptical, slightly bi-convex, attenuated at the base, with numerous rather strong ribs on each face, rather abruptly acuminate into a straight triangular-subulate smooth-edged entire beak about one-third the length of the rest of the fruit. Stigmas 2. Nut pale reddish brown, oval, plano-convex.

On damp rocks and grassy places on high mountains. Very rare. Discovered in 1836 by Dr. Dickie, on the south-west corner of the table top of Loch-na-gar, 200 or 300 feet below the top: I found it in 1851 plentifully by the side of a small loch on the north side of the hill, the name of the loch being, I believe, Loch-an-ean. Sparingly on the slope of Cairn-towl, ascending from the Garachary Burn.

Scotland. Perennial. Late Summer, Autumn.

Plant growing in small tufts, with 2 to 8 flowering stems and several barren shoots in each tuft. Stems 3 inches to 1 foot long,

more or less curving upwards at the base, and then ascending, usually twice as long as the leaves. Spike $\frac{1}{2}$ to $\frac{3}{4}$ inch long, commonly with 3 spikelets about $\frac{1}{4}$ inch long. Fruit about $\frac{1}{7}$ inch long, the beak being very slightly deflexed.

Linnaeus appears to have confounded *C. lagopina* with the very dissimilar *C. ovalis*, *Good*, and to have united them under the name of *C. leporina*, the *C. leporina* of his "*Flora Lapponica*" being *C. lagopina*, and that of his "*Flora Suecica*" being *C. ovalis*. It is therefore better to reject as ambiguous the name *leporina*, which some authors apply to one and some to the other of these two species.

Hare's-foot Sedge.

GROUP K.—CANESCENTES.

Rootstock cæspitose. Spike only slightly interrupted. Bracts minute, not foliaceous, rarely even setaceous. Spikelets whitish or yellowish, male at the base, female at the apex. Fruit ascending or erect, sessile, with an extremely short bidentate beak, not winged. Stigmas 2.

SPECIES XXI.—**CAREX CURTA.** *Good.*

PLATES MDCXXXI. MDCXXXII.

Rootstock very densely cæspitose, without stolons. Stems ascending or erect, rather slender, stiff, triquetrous, rough immediately under the spike. Leaves nearly as long as the stem, or shorter, erect, linear, flat, rough on the margins, pale glaucous green. Spike short or rather short, compound, slightly interrupted below, without a foliaceous bract at the base, or with a short one not exceeding the lowest spikelet. Spikelets 4 to 8, oval- or roundish-ovoid, simple, all male at the base, with scarious bracts, the lowest bract alone with a short setaceous point. Glumes of the female flowers ovate, acute or mucronate, greenish-white or pale yellowish-brown, with a green midrib and broad white scarious margins, a little shorter than the fruit. Fruit whitish, or very pale olive, erect, ovate, plano-convex, rounded at the base, very faintly ribbed, rather abruptly acuminate into an extremely short slightly rough-edged bifid beak. Stigmas 2. Nut pale yellowish, oval, obtuse at each end, plano-convex.

Var. α , *genuina*.

PLATE MDCXXXI.

*Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCVI. Fig. 546.**Billot, Fl. Gall. et Germ. Exsicc. No. 2155.**C. curta, Bab. Man. Brit. Bot. ed. vi. p. 381. Kunth, Enum. Plant. Vol. II. p. 403.**C. canescens, Linn. ex parte. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 870. Gren. & Godr. Fl. de Fr. Vol. III. p. 398. Reich. Ic. l.c. p. 7. Fries, Summ. Veg. Scand. p. 72. Parl. Fl. Ital. Vol. II. p. 144.*

Spikelets usually 6 or 7 or even more, oblong-ovoid, many-flowered. Glumes whitish, tinged with green. Fruit pale, with the beak slightly bifid.

Var. β , *alpicola*. Wahl

PLATE MDCXXXII.

*Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCVI. Fig. 547.**C. vitilis, Fries; Bab. Man. Brit. Bot. ed. vi. p. 381. Fries, Mant. III. p. 137; and Summ. Veg. Scand. p. 72. Gren. & Godr. Fl. de Fr. Vol. III. p. 398.**C. Persoonii, "Sieber;" Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 870. Parl. Fl. Ital. Vol. II. p. 145. Reich. Ic. l.c. p. 7.**C. Gebhardi, Hoppe; Kunth, Enum. Plant. Vol. II. p. 402 (non Schkuhr).*

Spikelets usually 4 or 5, roundish-ovoid, few-flowered. Glumes yellowish-brown, with a green keel and white margins. Fruit smaller and darker in colour than that of var. α , and with the beak more deeply bifid. Whole plant smaller and more slender than var. α .

In bogs and marshes, usually growing in shallow ditches and pools. Var. α , rather common and generally distributed, but not reaching the extreme north of Scotland. Rare, but widely distributed in Ireland. Var. β , on mountains in Wales, York, and the Scotch Highlands; very abundant on the table-land which separates the counties of Aberdeen and Forfar, at the head of Canlochan Glen.

England, Scotland, Ireland. Perennial. Summer.

Var. α has the stems 9 to 18 inches high, the leaves $\frac{1}{8}$ to $\frac{1}{4}$ inch broad, the spikes 1 to $1\frac{1}{2}$ inch long; spikelets $\frac{1}{4}$ to $\frac{5}{8}$ inch long; fruit about $\frac{1}{10}$ inch long.

The plant has the habit of *C. elongata*, but is much more glaucous. Spikes shorter, of fewer, shorter, and paler spikelets; the fruit much more erect, smaller, and much less strongly ribbed, and with the beak extremely short, notched at the end, and not deflexed.

Var. β has the stems 6 inches to 1 foot long, more decumbent and the leaves narrower than in var. α , the spike $\frac{1}{2}$ to 1 inch long, the spikelets $\frac{1}{6}$ to $\frac{1}{4}$ inch long, but the brown glumes afford the only character

by which the two can be separated, and that disappears to a great extent in cultivation.

I have had the var. β growing for several years. The original root was sent from Aberdeenshire by Mr. C. Bailey.

White Sedge.

German, *Weissgraue Segge.*

GROUP L.—OVALES.

Rootstock caespitose. Spike very slightly interrupted. Bracts minute, very seldom foliaceous, rarely even setaceous. Spikelets brown, rarely white, male at the base, female at the apex. Fruit ascending or erect, substipitate or sessile, with a rather long bidentate beak, and a more or less evident wing on the margins. Stigmas 2.

SPECIES XXII.—**CAREX OVALIS.** *Good.*

PLATE MDCXXXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXI.

C. leporina, Linn. Fl. Suec. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 869. Fries, Summ. Veg. Scand. p. 73. Gren. & Godr. Fl. de Fr. Vol. III. p. 397. Parl. Fl. Ital. Vol. II. p. 139. Reich. Ic. l.c. p. 8.

Rootstock rather densely caespitose, without stolons. Stems ascending, rather slender, stiff, triquetrous, slightly rough immediately below the spike. Leaves shorter than the stem, erect, narrowly linear, flat, slightly rough on the margins, bright green, not glaucous. Spike short, compound, continuous, without a setaceous bract at the base, or with a very short one, rarely with an elongated foliaceous bract. Spikelets 3 to 6, oval- or obovate-ovoid, simple, all male at the base, with scarious bracts; lowest bract alone with a short point. Glumes of the female flowers lanceolate-ovate, acute, reddish-brown, with a green midrib and narrow white scarious margins, about as long as the fruit. Fruit yellowish-brown with green wings, erect, substipitate, rhombic-ovate, faintly-ribbed, plano- or concavo-convex, abruptly narrowed at the base, and rather abruptly acuminate into a long triangular-subulate rough-edged deeply bifid beak, the whole surrounded by a narrow membranous wing. Stigmas 2. Nut chestnut, obovate-oval, narrowed at the base, rounded at the apex, plano-convex.

Var. α , genuina.

Bract of the lowest spikelet without a foliaceous point, or with one shorter than the spike.

Var. β , *bracteata*.

C. argyroglochin, London Catalogue (non *Hornem.*).

Bract of the lowest spikelet foliaceous, longer than the spike.

In meadows and marshes. Common and universally distributed.

Var. β , Castle-Morton Common, Worcestershire, Mr. T. Westcombe.

England, Scotland, Ireland. Perennial. Summer.

Stems 6 inches to 1 foot high, ascending, 2 to 12 in each tuft. Spike $\frac{3}{4}$ to 1 inch long, usually of 4 spikelets, $\frac{1}{4}$ to $\frac{1}{2}$ inch long. Fruit $\frac{1}{5}$ inch long, very unlike that of any other British *Carex*.

Of var. β I have seen no specimens except those collected by Mr. Westcombe; they have the stem 2 to 4 inches long, the spikes $\frac{1}{4}$ to $\frac{1}{2}$ inch long, consisting of 2 to 4 spikelets, the lowest bract $1\frac{1}{2}$ to 2 inches long.

The form with silvery glumes (*C. argyroglochin*, *Hornem.*) has not occurred in Britain, so far as I know.

Oval-spiked Sedge.

French, *Carex leporina*. German, *Hasenpfoten Segge*.

SECTION III.—HETEROSTACHYÆ. *Fries.*

Flowers arranged in separate spikes, the terminal spike male or androgynous, the lateral spikes female and commonly stalked: sometimes 1 or more of the uppermost lateral spikes male.

GROUP M.—ATRATÆ.

Rootstock caespitose or subcaespitose, or shortly creeping, often stoloniferous. Spikes approximate or subapproximate, the uppermost one androgynous, male at the base, rarely wholly male. Lateral spikes wholly female, ovoid, sessile or shortly stalked, dense. Glumes dark. Lowest bract shortly foliaceous, without a closed sheath. Fruit pale, sessile or substipitate, depressed-trigynous, not inflated or but slightly so, with an extremely short notched beak. Stigmas 3. Nut trigynous or triquetrous.

SPECIES XXIII.—**CAREX ATRATA.** *Linn.*

PLATE MDCXXXV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXXVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2568.

Rootstock caespitose, with very short stolons. Stem erect, slender, triangular, smooth, or very slightly rough immediately beneath the

lowest spike. Leaves shorter than the stem, broadly linear, flat, slightly rough on the margins towards the apex, bright deep green, not glaucous; sheaths closed, not filamentous. Terminal spike male at the base, rarely also at the apex or male throughout, stalked. Female spikes rather approximate, 2 to 4, shortly stalked, the lowest with a stalk about the length of the spike, at length drooping, oval or oblong-ovoid. Lowest bract foliaceous, not sheathing, equalling or exceeding the terminal spike, with 2 small concolorous auricles at the base; second bract also foliaceous, but shorter than its own spike. Glumes of the female flowers ovate, acute, reddish-black, with or without a paler midrib and concolorous margins, as long as but narrower than the fruit. Fruit ascending-erect, sessile, broadly oval, plano-convex-trigonus, smooth, not ribbed, very pale green, very abruptly narrowed into a very short smooth black slightly notched beak about one-tenth the length of the rest of the fruit. Stigmas 3. Nut pale brown, oval-obovate, triquetrous, not half the length of the fruit.

On ledges of rock on high mountains. In England it is known to occur only in Carnarvon. In Scotland in Dumfries, and the Scotch Highlands: frequent on the Breadalbane and Clova Mountains; sparingly on Loch-na-gar and Ben Maedhui in Braemar.

England, Scotland. Perennial. Summer.

Plant growing in rather small tufts. Stems 9 inches to 2 feet high, leafy only at the base. Leaves about $\frac{1}{4}$ inch broad, flat, with a central furrow and a keel beneath. Inflorescence* usually $1\frac{1}{2}$ to 2 inches long. Terminal spike about $\frac{1}{2}$ inch long; lowest female spike $\frac{1}{2}$ to $\frac{3}{4}$ inch long. Fruit $\frac{1}{5}$ inch long.

A very handsome species, readily distinguished from the other *Atrata* by its drooping lateral spikes, with dark-coloured glumes, beyond the edges of which the pale fruit appears. Sometimes the lowest bract is placed at a little distance beneath the lowest spike.

Mr. H. C. Watson mentions a form produced in his garden from a root brought from the Grampians, in which "the terminal spike was almost entirely male and cylindrical, 4 inferior spikes of female flowers with a few males interspersed, cylindrical or oblong-erect, and placed rather distantly one below another, the lowest about 3 inches beneath the terminal male spike." (Phyt. ser. i. vol. iii. p. 454.)

Black Sedge.

French, *Carex en deuil*. German, *Schwärzliche Segge*.

* Measuring from the bottom of the stalk of the lowest spike to the apex of the terminal spike.

SPECIES XXIV.—**CAREX ALPINA.** *Swartz.*

PLATE MDCXXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXXV. Fig. 588.

C. Vahlb., Schenkler; Greville in Eng. Bot. Suppl. No. 2666. Bab. Man. Brit. Bot. ed. vi. p. 383. Hook. & Arn. Brit. Fl. ed. viii. p. 506. Kunth, Enum. Plant. Vol. II. p. 431. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 874. Reich. l. c. p. 16.

Rootstock scarcely caespitose, with rather short stolons. Stem erect, slender, wiry, triangular, very rough beneath the lowest spike. Leaves much shorter than the stem, narrowly linear, flat, rough on the margins towards the apex, bright deep green, not glaucous; sheaths closed, not filamentous at the margins. Terminal spike male at the base, and sometimes also at the apex, rarely male throughout, sessile or subsessile. Female spikes contiguous, 2 to 3, sessile or subsessile, the lowest with a stalk shorter than the spike, all spreading-ascending, roundish-ovoid. Lowest bract foliaceous, not sheathing, about equaling the terminal spike or a little shorter, with 2 small reddish auricles at the base; second bract extremely short, foliaceous, about as long as its own spike, or more generally scarious. Glumes of the female flowers rhombic-oval, subacute, reddish-black, with a nearly concolorous midrib, and very narrow white scarious margins, a little shorter than but nearly as broad as the fruit. Fruit spreading-ascending, sessile, roundish-obovate, slightly compressed-trigonal, scabrous at the top, not ribbed, very pale yellowish-green, very abruptly terminated by an extremely short rough black notched beak about one-tenth the length of the rest of the fruit. Stigmas 3. Nut very pale brown, turbinate-triquetrous, nearly the length of the fruit.

On damp ledges of rock on high mountains. Very rare. In the corrie of Loch Ceander, above Loch Callater, Aberdeenshire, where it was discovered by Professor Balfour and Dr. Greville in 1830; also in Glen Fiadh, on the south side of Glen Dole, Clova.

Scotland. Perennial. Summer.

Plant growing in small loose tufts emitting short stolons, which terminate in a leafy shoot. Stem 3 to 15 inches high, with leaves only at the base. Leaves $\frac{1}{8}$ inch broad. Terminal spike $\frac{1}{4}$ inch long. Lowest female spike $\frac{1}{4}$ inch long. Fruit about $\frac{1}{10}$ inch long.

The above description applies only to the British specimens, for in Scandinavia it is very variable in size, sometimes 2 feet high; sometimes the lower spike is remote from the others—according to Dr. Greville, one of the original specimens collected in Glen Callater had

this peculiarity; sometimes the fruit is reddish-brown, and very little longer than the glumes.

Close-headed Alpine Sedge.

SPECIES XXV—**CAREX BUXBAUMII.** *Wahl.*

PLATE MDCXXXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXXV. Fig. 589.

Billot, Fl. Gall. et Germ. Exsicc. No. 1349.

C. canescens, Linn. Herb. Hook. & Arn. Brit. Fl. ed. viii. p. 507

Rootstock shortly creeping, with rather long stolons. Stem erect or slightly arched, slender, rather stiff, triquetrous, rough towards the apex. Leaves nearly as long as the stem, linear, flat, rough on the margins towards the apex, pale glaucous green; sheaths at length split and filamentous at the margins. Terminal spike male at the base, shortly stalked, subsessile or clavate-ovoid. Female spikes 2 to 4, subapproximate, except the lowest, which is usually more than its own length distant from the others, subsessile; the lowest with a stalk shorter than the spike, suberect, oval or oblong-ovoid. Lowest bract foliaceous, not sheathing, about equalling the apex of the terminal spike or a little longer or shorter, with 2 small reddish auricles at the base; second bract also foliaceous, about as long as its own spike. Glumes of the female flowers lanceolate, acuminate, acute or sometimes subaristate or ovate-lanceolate and cuspidate, purplish-brown, with a broad white midrib and concolorous margins, as long as or a little longer but usually much narrower than the fruit. Fruit erect-ascending, substipitate, oblong-elliptical, abruptly narrowed at the base, plano-convex, scarcely trigonous, smooth, indistinctly nerved, very pale glaucous-green, with a beak reduced to a reddish-black 2-toothed tubercle. Stigmas 3. Nut chestnut, frosted over with white, oval-obovate, triquetrous, abruptly mucronate, considerably shorter than the fruit.

On damp stony margins of lakes. Very rare. Discovered by Dr. D. Moore in 1835 on a small island called Harbour Island in Lough Neagh, near Toom-bridge, Derry, which is still the only known locality, as it has not been found elsewhere in Britain.

Ireland. Perennial. Summer.

Plant growing in tufts, which send out numerous rather long stolons which produce barren shoots at some distance from the parent plant. Stems 1 to 2 feet high, rather weak; sheaths reddish, at length splitting down the front, and remaining connected by numerous fibres. Inflorescence $1\frac{1}{2}$ to 3 inches long. Terminal spike $\frac{1}{2}$ to $\frac{3}{4}$ inch; the

lowest lateral spike about the same length or a little shorter. Fruit $\frac{1}{5}$ inch long, its pale margins showing conspicuously beyond the glumes in the fresh plant, but in continental specimens the glumes are frequently so broad as to cover the greater part of it, and the fruit in these is often tinged with brown.

Hoary Sedge.

French, *Carex de Buxbaum.* German, *Buxbaum Segge.*

GROUP N.—ACUTÆ.

Rootstock cæspitose or subcæspitose, rarely creeping, but often stoloniferous. Spikes subapproximate or remote, the uppermost one wholly male, very rarely male only at the base. Lateral spikes all female, or 1 or 2 of the uppermost wholly male; the female spikes cylindrical, rarely ovoid, sessile or shortly stalked, dense, erect or slightly drooping and curved. Glumes dark. Lowest bract longly foliaceous, without a closed sheath. Fruit pale, substipitate, sessile, plano-convex, not inflated, with an extremely short entire or slightly notched beak. Stigmas 2. Nut plano-convex.

SPECIES XXVI.—**CAREX STRICTA.** *Good.*

PLATE MDCXXXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXX.

Billot, Fl. Gall. et Germ. Exsicc. No. 868.

C. cæspitosa, Gay; Hook. & Arn. Brit. Fl. ed. viii. p. 509 (non Linn. test. Fries).

Rootstock very densely cæspitose, without elongate stolons. Stem erect, rather slender, rigid, triquetrous, rough towards the apex. Leaves as long as or a little shorter than the stem, erect, rather firm, linear, flat, rough on the margins, dull green, more or less glaucous; sheaths at length split and filamentous at the margins, the lowest ones on the flowering stem without laminae. Male spike 1 (more rarely 2), cylindrical. Female spikes 1 to 3, subapproximate, sessile or subsessile, erect, oblong- or fusiform-cylindrical, with the fruits imbricated in 8 longitudinal rows. Lowest bract foliaceous, not sheathing, not reaching the apex of the male spike, with 2 rather long narrow adnate pale reddish scarious auricles at the base, resembling a split sheath a little longer than the width of the bract. Glumes of the female flowers elliptical-lanceolate, obtuse or acute, reddish-black, usually with a green midrib and concolorous or very rarely pale scarious margins, equalling or a little shorter and much narrower than the fruit. Fruit erect-adpressed, substipitate, ovate-elliptical, abruptly

narrowed at the base, lenticular, smooth, indistinctly nerved on the face, finely 3- to 5-nerved on the back, pale glaucous green, rather gradually narrowed into a very short smooth entire pale-brown point representing the beak. Stigmas 2. Nut pale yellowish, oblong-obovate, obtuse, plano-convex.

In ditches and wet places. Rare, or at least very local, though widely distributed in England; most frequent in the Fens. Said in the "*Cybele Hibernica*" to be frequent throughout Ireland, from whence I have specimens from Lough Gall, co. Armagh, collected by Mr. A. G. More.

England, Ireland. Perennial. Spring.

Stems 18 inches to 3 feet high, growing in dense tufts. Leaves $\frac{1}{8}$ to $\frac{1}{4}$ inch broad. Male spike $1\frac{1}{4}$ to 2 inches long, sometimes with a second shorter male spike a little way below it; female spikes 1 to 2 inches long. Fruit $\frac{1}{8}$ inch long, usually stained with purplish black at the base. Auricles of the bracts adnate, resembling a short sheath split open down the front to the base.

C. stricta, the first of the group of *Carexes* with completely unisexual spikes and 2 stigmas, is readily distinguished when growing by the large tussocks which it forms, inferior in size only to those of *C. paniculata*. In the dried state it may be distinguished by its split and filamentous-edged sheaths, the lower ones destitute of leaves. The 8-rowed spikes distinguish it from *C. acuta*, which approaches it in size.

Following the law of priority, *C. stricta* is an inadmissible name for the present species, because it had been applied by Lamarck to an American plant a few years before Dr. Goodenough used it as a designation of the European one. However, as European botanists almost universally concur in calling the European plant *C. stricta*, it seems better to retain the name for it, and designate the American by the name *C. angustata*, given to it by Dr. Boott. Dr. Wimmer's name for the European plant of *C. gracilis* has not been adopted in any standard work, and is besides open to the objection that it had been previously used by Curtis as the designation of *C. acuta*, *Auct.*, and though not retained as a specific name has been applied to several different species of *Carex*.

Tufted Sedge.

French, *Carex raide*. German, *Steife Segge*.

SPECIES XXVII.—**CAREX ACUTA.** "*Limn.*" *Auct.*

PLATE MDCXXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXI. and CCXXII.

Billot. Fl. Gall. et Germ. Exsicc. No. 2567.

C. gracilis, *Curt.* Fl. Lond. Fasc. iv. Tab. LXII.

Rootstock caespitose, with or without elongate stolons. Stem erect

but slightly drooping at the apex while in flower, rather stout, rigid, triquetrous, rough towards the apex, or very rarely smooth throughout. Leaves about as long as the stem, erect, rather flaccid, broadly linear, flat, rough on the margins, dull green above, slightly glaucous beneath; sheaths entire, not filamentous at the margins, all with laminae except the very lowest. Male spikes 2 or 3 (rarely only 1), cylindrical. Female spikes 3 to 5, subapproximate or rather remote, subsessile, or the lower ones shortly stalked, ultimately erect, rarely slightly drooping, cylindrical, with the fruits densely imbricated all round. Bracts foliaceous, not sheathing, the lowest one reaching to the apex of the male spike or exceeding it, with 2 long narrow adnate white or pale brownish scarious auricles at the base, resembling a split sheath much longer than the width of the bract. Glumes of the female flowers narrowly lanceolate, acute or obtuse, reddish-black or reddish-brown with a green midrib and concolorous margins, equalling or exceeding or shorter than but always much narrower than the fruit. Fruit ascending, substipitate, oval, acuminate at each end, lenticular, smooth, faintly and shortly ribbed on both sides, pale green or pale fawn-colour, with a very short cylindrical entire smooth or slightly rough point or beak. Stigmas 2. Nut pale olive, obovate-rhombic, lenticular.

By the sides of streams, ditches, and rivers. Rather common, and generally distributed in England. Reported on good authority to occur in Scotland, but I have seen no Scotch specimens, and should not be surprised to find that most of the Scotch *C. acuta* proved to be *C. aquatilis*, var. β *Watsoni*. Local, but widely distributed in Ireland.

England, Scotland, Ireland. Perennial. Spring, early Summer.

A variable plant, with stems 1 to 3 feet high. Leaves $\frac{1}{4}$ to $\frac{3}{8}$ inch broad or more, revolute on the margins towards the apex when dried without much pressure. Male spikes variable in number (rarely only 1), 2 to 3 inches long. Female spikes 2 to 4 inches long or even more, sometimes with a few male flowers at the apex, but less generally so than in *C. stricta*, drooping while in flower, afterwards usually erect or nearly so. Glumes variable in length with respect to the fruit, being sometimes shorter, sometimes equal to, and sometimes exceeding the fruit, purplish-black, more rarely reddish-brown. Fruit $\frac{1}{8}$ inch long. Auricles of the bracts adnate, resembling a rather short sheath split down the front to the base.

Distinguished from *C. stricta* by the sheaths at the base of the stem not having filamentous margins, and by the spikes being generally longer, and with the fruit more regularly imbricated and less adpressed.

A form of *C. acuta* growing in dense tufts, and with the glumes longer than the fruit, grows in the ditch by the side of the towing-path on the banks of the Thames near Richmond. This is perhaps *C. proluxa* of Fries, but of the Scandinavian plant I have seen no specimens.

A small form with the glumes shorter than the fruit and less acute than usual I possess from clay pits at Northwick, near Worcester, collected by Mr. G. Maw. This is perhaps *C. tricostrata* of Fries, but in this case also I have no means of comparing it with the Scandinavian plant.

Slender-spiked Sedge.

French, *Carex aigu.* German, *Spitzkantige Segge.*

SPECIES XXVIII.—**CAREX RIGIDA.** *Good.*

PLATE MDCXL.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXV. Fig. 578.

C. saxatilis, "Linn." *Willd. Kunth. Enum. Plant. Vol. II. p. 410.*

Rootstock not caespitose, creeping, with elongate stolons. Stem erect or slightly curved, rather stout, very rigid, triquetrous, rough immediately beneath the lowest spike, or more rarely smooth throughout. Leaves shorter than the stem, recurved, stiff, broadly linear, flat, rough on the margins, bright shining green, slightly glaucous beneath; sheaths entire, not filamentous at the margins, all with laminae except the very lowest. Male spike 1, clavate or fusiform. Female spikes 2 or 3, rarely 1 or 4, all approximate, or the lower one rather remote, subsessile or the lower one shortly stalked, erect, fusiform- or oblong-ovoid, rarely oblong-cylindrical, with the fruit densely imbricated all round. Lowest bract foliaceous, not reaching to the apex of the male spike, and generally much shorter, with 2 short prominent oblong nearly free brown subscarios auricles at the base. Glumes of the female flowers ovate-oval, obtuse, reddish-black, with green or pale midribs and narrow pale margins, equalling or shorter than but nearly as broad as the fruit. Fruit ascending, substipitate, broadly oval, lenticular, smooth, not ribbed, pale green or olive, abruptly terminated by a very short cylindrical entire smooth point or beak. Stigmas 2. Nut pale olive, roundish-obovate, lenticular.

On rocky ledges and barren stony places, and in marshes on high mountains. Rather common. It occurs in Carnarvon, Teesdale, and Cheviotland in England. In Scotland on Hartfell, Dumfries; and plentifully in the Scottish Highlands, forming a great part of the turf on the bare summits of even the highest mountains. On the moun-

tains of Kerry and Tipperary in the south of Ireland, and on most of the high mountains in the north.

England, Scotland, Ireland. Perennial. Summer.

Plant growing in loose tufts with the greater part of the rhizomes above ground when on rocky ledges, but buried when on stony level places or in marshes. Stems 3 to 15 inches high, thick for the size of the plant. Leaves broad in proportion to their length, usually about $\frac{1}{4}$ inch broad, numerous at the base of the stems, and in the barren tufts proceeding from the stolons. Male spikes about $\frac{1}{2}$ inch long; female spikes $\frac{1}{4}$ to $\frac{3}{4}$ inch long. Fruit $\frac{1}{6}$ inch long.

A well-marked species, distinguished by its thick rigid stems, stiff reflexed broad leaves, with the margins revolute when dried, short spikes, and ribless fruit.

In marshes on Loch-na-gar, and also on little Craigendal, near the station for *Astragalus alpinus*, however, I have gathered a form which closely approaches *C. aquatilis*: it has the stems quite smooth at the summit and the glumes reddish-brown. Lower spike usually at some distance from the others, longer, more slender, and more lax at the base than in the common form.

Stiff Mountain Sedge.

French, *Carex des Frimas*. German, *Starre Segge*.

SPECIES XXIX.—**CAREX AQUATILIS.** *Wahl.*

PLATES MDCXLI. MDCXLII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXXIV.

Billot, Fl. Gall. et Germ. Exsicc. No. 2566.

Rootstock subcaespitose, shortly creeping, with elongate stolons. Stem erect, rather stout, stiff, trigonous, smooth throughout. Leaves nearly as long as the stem, erect, rather stiff, linear, flat or channelled, very slightly rough on the margins, yellowish-green, slightly glaucous; sheaths entire, not filamentous at the margins, all with laminae except the very lowest. Male spike 1 or rarely 2, cylindrical or fusiform-cylindrical. Female spikes 2 to 4, rather remote, subsessile, except the lower one, which is usually more or less longly stalked, erect, cylindrical, with the fruits densely imbricated all round. Bracts foliaceous, the lowest one usually equalling or exceeding the apex of the male spike, with 2 short prominent oblong nearly free brown scarious auricles at the base. Glumes of the female flowers ovate-oval, obtuse or acute, reddish-brown, with broad green or pale midribs with concolorous margins, as long and usually nearly as broad as the fruit.

Fruit erect-adpressed, subsessile, broadly oval-lenticular, smooth, not ribbed, very pale olive or greenish, abruptly narrowed into a very short smooth entire point or beak. Stigmas 2. Nut pale fawn-colour, oblong-obovate, plano-convex.

Var. α , *genuina*.

PLATE MDCXLI.

Male spike 1. Glumes obtuse. Female spikes lax at the base.

Var. β , *Watsoni*.

PLATE MDCXLII.

Male spikes commonly 2. Glumes acute or mucronate. Female spikes densely flowered throughout. Stem taller and spikes longer than in var. α .

In marshes. Var. α on mountains. Common on the tableland which divides the counties of Aberdeen and Forfar; sparingly on Loch-na-gar, Aberdeen. Var. β , Lanarkshire (Dr. J. Hooker, in Herb. Wats.), and banks of the Almond, at Linlithgow Bridge (Dr. H. Cleghorn and Mr. W. H. Campbell). The plant from Glen Clova I have not seen growing: my specimens are intermediate between the two vars.

In Balfour's "Flora of Edinburgh," *C. aquatilis* is stated to grow in Loch Fitty, Fife, but I have not seen specimens, though I should expect them to belong to var. β , which seems to be the Lowland form of the species.

Scotland. Perennial. Summer, Autumn.

Var. α has the stems 6 to 18 inches high, the leaves very numerous, $\frac{1}{8}$ inch broad or more, shorter than the stem. Male spike 1 to 1 $\frac{1}{2}$ inch long; female spikes 1 to 2 inches long. Fruit $\frac{1}{8}$ inch long.

Var. β has much the habit of *C. acuta*. Stems frequently 2 feet high. Female spikes between 2 and 3 inches long. Fruit destitute of the ribs which distinguish the fruit of *C. acuta*, and more adpressed. Bracts with the short prominent auricles of *C. aquatilis*, not the long narrow adnate ones of *C. acuta*.

The leaves of both forms have a tendency to become involute at the edges when dried, not revolute as in all the previous species of this section, and the glumes are of a redder and paler brown, the lowest female spike generally lax at the base, and the leaves more numerous at the base of the flowering stems. When in fruit the absence of ribs distinguishes *C. aquatilis* from all the other *Acute* except *C. rigida*.

Water Sedge.

SPECIES XXX.—**CAREX VULGARIS.** *Fries.*

PLATE MDCXLIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tabs. CCXXVII. and CCXXVIII.*Billot.* Fl. Gall. et Germ. Exsicc. No. 2564.*C. caespitosa.* *Good.* *Sm.* Engl. Bot. ed. i. No. 1507; and Engl. Fl. Vol. IV. p. 117.*Kunth.* Enum. Plant. Vol. II. p. 411.*C. Goodenovii.* *Gay.* *Gren. & Godr.* Fl. de Fr. Vol. III. p. 402.

Rootstock creeping, or more or less caespitose, with or without long stolons. Stem erect, slender, stiff, triquetrous, slightly rough at the apex. Leaves nearly as long as the stem, erect, rather stiff, narrowly linear, flat or channelled, rough on the margins, dull green, more or less glaucous; sheaths entire, not filamentous at the margins, all with laminae except the very lowest. Male spike 1, more rarely 2 (very rarely androgynous, with female flowers in the middle), cylindrical or fusiform-cylindrical. Female spikes 2 to 4, approximate or rather remote, sessile, or the lowest one with a short stalk, erect, oblong-cylindrical or oblong-fusiform, with the fruit densely imbricated all round, or in 7 or 8 longitudinal rows. Bracts foliaceous, the lowest one usually equalling or exceeding the apex of the male spike, but sometimes falling short of it, not sheathing, with 2 very short and prominent semicircular dark brown or purplish auricles at the base. Glumes of the female flowers lanceolate-oval, obtuse, rarely acute or cuspidate, commonly nearly as long but not so broad as the fruit, very rarely considerably shorter or a little longer than the fruit. Fruit erect-adpressed, sessile, broadly-oval, plano-convex, faintly ribbed towards the base, pale greenish or pale olive, abruptly terminated by a short smooth entire point or beak. Stigmas 2. Nut pale fawn-colour, roundish-obovate, plano-convex.

Var. *α*, *genuina*.

PLATE MDCXLIII.

Slightly caespitose, with the flowering stems few or solitary in each tuft. Glumes a little shorter than the fruit. Fruit obtuse.

Var. *β*, *uliginosa*.

Densely caespitose. Stems numerous in each tuft. Glumes a little shorter than or as long as the fruit. Fruit obtuse.

(?) Var. γ , *Gibsoni*.

C. Gibsoni, *Bab.* in *Ann. Nat. Hist. Ser. I. Vol. XI. Tab. V.*; and *Man. Brit. Bot.* ed. vi. p. 383. *Hook. & Arn. Brit. Fl.* ed. viii. p. 508.

Thinly caespitose (?). Glumes at least one-third shorter than the fruit. Fruit acute. Nut longer in proportion to its breadth than in vars. α and β .

In meadows and marshes, and by the sides of ponds and rivers. Very common and universally distributed. Var. β in muddy places. Var. γ at Hedben Bridge, Yorkshire, now lost by drainage.

England, Scotland, Ireland. Perennial. Spring, Summer.

A very variable plant, with the stems 3 inches to 2 feet high. Leaves $\frac{1}{10}$ to $\frac{1}{8}$ inch broad, involute when dry, narrower than in the other species of the section *Acute*. Female spikes $\frac{1}{4}$ to $1\frac{1}{2}$ inch long, variable in thickness, often with a few male flowers at the apex, in shape generally resembling those of *C. stricta*, but forms occur in which they closely resemble those of *C. acuta* or *C. aquatilis*. Fruit $\frac{1}{8}$ inch long, variable in colour, but commonly green.

C. Gibsoni (*Bab.*) I have not seen, but from the description it appears to be a form of *C. vulgaris* with enlarged perigynia, such as we find occur in *C. disticha*, *Huds.*, and perhaps *C. fulva*, *Good.*

In a marsh between Pitgobar and the Vicar's Bridge, Dollar, Clackmannanshire, in 1839, I found a remarkable form or rather monstrosity of *C. vulgaris*. This has the terminal spike androgynous, with male flowers at the base and a few at the apex. The female spikes short, contiguous, the fruit densely imbricated, shorter than the glumes, which are acuminate-acute, and the lower ones cuspidate. The plant has much the aspect of the dark-spiked forms of *C. Buxbaumii*, *Wahl.*, but it has the fruit and nut both plano-convex, and the stigmas only 2.

C. vulgaris occasionally simulates all the other forms belonging to the *Acute* section, but has the leaves narrower and more decidedly involute when dry than any of them. From *C. stricta*, *Good.*, it differs further in the lower sheaths not being split and filamentous at the margins, and many more of those at the base of the flowering stem furnished with laminae, also in the auricles of the bracts being very short, prominent, and very dark in colour, and the fruit with the ribs not extending to the apex.

From *C. acuta* it differs in the stem being straight even while in flower, the bracts with short prominent and dark coloured auricles, the fruit adpressed, flat on the upper side, and the glumes usually shorter and obtuse.

From *C. rigida* it differs in its less rigid habit, much narrower less shining and erect leaves, fruit less spreading and conspicuously nerved at the base, and scarcely at all convex on the upper side.

From *C. aquatilis* it differs in the fruit being distinctly nerved towards the base and the spikes usually much thicker and shorter.

The fruit of *C. vulgaris* is broader in proportion to its length, and less narrowed towards the apex than in any of the *Acutæ* except *C. aquatilis*, and it is hardly even indistinctly stipitate, as in all the others of the section to which it belongs.

Common Sedge.

French, *Carex commun.* German, *Gemeine Segge.*

GROUP O.—LIMOSÆ.

Rootstock creeping, with long stolons. Spikes rather remote, rarely approximate, the uppermost one wholly male (rarely with a few female flowers), the lateral ones nearly wholly female, on capillary stalks, dense or lax, drooping, rarely suberect: more rarely 1 or 2 of the uppermost lateral spikes male. Glumes dark. Lowest bract foliaceous, without a closed sheath, or rarely with a short one. Fruit glaucous green, rarely dark brown or black, smooth or slightly rough, depressed-trigonus or trigonus-lenticular, not inflated, with an extremely short entire or slightly notched point or beak. Stigmas 3. Nut trigonus.

SPECIES XXXI.—**CAREX GLAUCA.** *Scop.*

PLATES MDCXLIV. MDCXLV. MDCXLVI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXIX.

Billot, Fl. Gall. et Germ. Exsicc. No. 1571.

C. recurva, Huds. Sm. Engl. Fl. Vol. IV. p. 114.

C. flacca, Schreb. Schkur, Car. Vol. I. p. 117.

Rootstock extensively creeping, with elongate stolons. Stem erect, slender, wiry, trigonus, smooth throughout. Leaves erect or recurved, shorter than the stem, linear, flat, slightly rough on the margins towards the apex, very glaucous. Male spikes 1 to 3, linear-fusiform. Female spikes 2 to 3, remote or more or less approximate, more or less distinctly stalked, ultimately drooping or more rarely suberect when the stalks are very short, cylindrical or oblong-ovoid or ovoid, dense and many-flowered. Lowest bract foliaceous, as long as or longer than the male spike, shortly sheathing, the sheaths sometimes scarcely apparent. Glumes of the female flowers ovate or roundish-ovate, acute or more rarely obtuse, purplish-black or dark reddish-brown, with green or pale midribs, about as long as but not so broad as the fruit. Fruit ascending or ascending-spreading, sessile, oval or obovate,

trigonus-lenticular, not inflated, not ribbed, more or less roughened with minute scales or dots, glaucous green or olive or brown, sometimes with purplish-black stripes or wholly purplish-black, abruptly acuminate into an extremely short deflexed entire point or beak. Stigmas 3. Nut pale fawn-colour, obovate trigonous, rather abruptly apiculate, closely covered by the perigynium.

Var. α , *genuina*.

PLATE MDCXLIV.

C. recurva, *Sm.* Eng. Bot. ed. i. No. 1506; and Eng. Fl. Vol. IV. p. 114.

Female spikes cylindrical. Glumes acute. Fruit decidedly rough.

Var. β , *Micheliana*. *Sm.*

PLATE MDCXLV.

Sm. Engl. Fl. Vol. IV. p. 115.

C. Micheliana, *Sm.* Trans. Linn. Soc. Vol. V. p. 270; and Engl. Bot. ed. i. No. 2236.

Female spikes cylindrical. Glumes obtuse. Fruit smaller and smoother than in var. α .

Var. γ , *stictocarpa*. *D. Don*

PLATE MDCXLVI.

C. stictocarpa, *Sm.* Engl. Fl. Vol. IV. p. 127. *D. Don.* Engl. Bot. Suppl. No. 2772.

Female spikes oblong-ovoid or ovoid. Glumes acute. Fruit dotted all over.

In meadows, pastures, and on dry hills, banks, and downs, open places in woods, and on rocky ledges. Very common, and universally distributed. Vars. β and γ in mountainous districts: var. β was received by Smith from Aberdeenshire, and var. γ from Clova. I have found var. γ on Stulich-an-lochan, Ben Lawers, Perth.

England, Scotland, Ireland. Perennial. Spring, Summer.

Rootstock extensively creeping. Stems subsolitary, from 2 inches to 2 feet high. Leaves from $\frac{1}{8}$ to $\frac{1}{4}$ inch broad. Male spikes, which are variable in number, with the terminal or longest one $\frac{1}{2}$ to $1\frac{1}{2}$ inch long; the lowest or longest female spike $\frac{1}{2}$ to $1\frac{3}{4}$ inch. The stalk of the lowest female spike is usually about the length of the spike, those of the succeeding spike shorter. The female spikes are not unfrequently male at the apex and sometimes compound at the base. Fruit about $\frac{1}{8}$ inch long, convex on the upper side, more so and bluntly

keeled on the lower, and bent over towards the apex, from which the extremely short tubercle-like beak is produced.

The varieties given above are now universally admitted to be not specifically distinct from the type, though var. γ is very unlike it in habit.

A very variable plant, but readily recognised by its extensively creeping rootstock and very glaucous leaves, associated with slender stalked female spikes, short-sheathing bracts, and slightly flattened fruit more or less clothed with minute asperities, and with an extremely short entire beak.

Glaucous Heath Sedge.

French, *Carex glauque*. German, *Meergrüne Segge*.

SPECIES(?) XXXII.—**CAREX IRRIGUA.** *Hoppe*.

PLATE MDCXLVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXXVIII. Fig. 593.

C. limosa, β , *irrigua*, *Wahl.* *Hook. & Arn.* Brit. Fl. ed. viii. p. 515. *Kunth*, Enum. Plant. Vol. II. p. 461.

Rootstock creeping, the branches usually with several stems flowering in a tuft at the apex, and short stolons. Stem erect, rather slender, stiff, triquetrous, smooth throughout, or slightly rough immediately below the lowest spike. Leaves erect, somewhat flaccid, shorter than the stem, linear, flat, with short rough-edged triquetrous points, bright green, scarcely glaucous. Male spike 1, clavate-cylindrical, often with a few female flowers at the apex. Female spikes 2 or 3, rather approximate, on long capillary stalks, ultimately drooping, oblong-ovoid, usually narrowed at the base, dense- and many-flowered. Lowest bract foliaceous, equalling or more usually considerably exceeding the apex of the male spike, not sheathing, with rather short adnate auricles. Glumes of the female flowers lanceolate, longly acuminate or cuspidate-acuminate, longer but narrower than the fruit, concave, dark chestnut, with the midrib nearly concolorous. Fruit spreading-ascending, subsessile, roundish-oval, trigonous-lenticular, not inflated, very faintly ribbed, smooth, glaucous green, tinged with pale rust-colour, abruptly acuminate into an extremely short entire point or beak. Stigmas 3. Nut brown, oval, bluntly-trigonous, shortly mucronate, closely covered by the perigynium.

In peaty bogs. Very local. Muckle Moss, near Thorngraston, Northumberland, where it was found for the first time in Britain by Mr. John Thompson. It has since occurred at Terregles, near Dumfries, Kirkcudbrightshire, from whence I have specimens; and in the "British Flora," it is stated to occur "at Ben Inn, near Loch

Lomond, Clova Mountains, and Hill of Knock, Dunfermline." The only place in which I have ever gathered it was in Glenquay Moss, Perthshire, 3 or 4 miles north-east of Dollar, where I found it in 1838.

England, Scotland. Perennial. Summer.

Rootstock shortly creeping, the branches usually short, with the flowering stems in small tufts. Stems 8 to 18 inches high. Leaves $\frac{1}{8}$ inch broad or a little more, 5 to 9 inches long. Male spike $\frac{1}{4}$ to $\frac{3}{4}$ inch long; female spikes $\frac{1}{4}$ to $\frac{3}{4}$ inch. Lowest peduncle $\frac{1}{2}$ to 1 inch long. Fruit $\frac{1}{6}$ inch long.

For the differences between this and *C. limosa* see the remarks under the following species.

Broad-leaved Mud Sedge.

German, *Gletscher-Segge*.

SPECIES XXXIII.—**CAREX LIMOSA.** *Linn.*

PLATE MDCXLVII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXXVIII. Fig. 592.

Billot, Fl. Gall. et Germ. Exsicc. No. 1350.

C. limosa, *a. Wahl. Hook. & Arn. Brit. Fl. ed. viii. p. 515. Kunth, Enum. Plant. Vol. II. p. 461.*

Rootstock creeping, the branches with 1 or 2 stems at the apex, and rather short stolons. Stem erect from a curved base, almost setaceous, weak, triquetrous, rough in the upper part. Leaves erect, rather stiff, shorter than the stem, very narrowly linear, channelled, with long triquetrous points, rough on the margin throughout, glaucous. Male spike 1, linear-fusiform or clavate-cylindrical, sometimes with a few female flowers at the apex. Female spikes 1 or 2, rather remote, on rather long capillary stalks, ultimately drooping, ovate-oblong, usually abrupt at the base, dense and many-flowered. Lowest bract foliaceous or setaceous, usually not reaching to the base of the male spike, and never extending beyond its apex, scarcely sheathing, with 2 short nearly free auricles at the base, which are sometimes slightly united below, so as to form a very short sheath. Glumes of the female flowers ovate, shortly cuspidate or mucronate, concave, dark brown or chestnut, or fawn-colour, usually with a pale or green midrib, about as long and as broad as the fruit. Fruit ascending, subsessile, ovate-elliptical, trigonous-lenticular, not inflated, faintly ribbed, glaucous green or fawn-colour, rather abruptly acuminate into an extremely short entire point or beak. Stigmas 3. Nut

yellow, elliptical, bluntly trigonous, shortly mucronate, closely covered by the perigynium.

In peat mosses and spongy bogs. Rare, but widely though thinly distributed, from Dorset, Hants, and Suffolk to Aberdeen, and Skye, and perhaps also to Sutherland. Local in Ireland, but extending from the south to the north of the island, though most frequent in the west and north.

England, Scotland, Ireland. Perennial. Summer.

Rootstock extensively creeping, each of its branches producing from 1 to 3 flowering stems and a few barren tufts. Stem very slender, 6 to 12 inches high, more or less curved below, leafy only at the base. Male spike $\frac{1}{2}$ to 1 inch long; female spikes $\frac{3}{8}$ to $\frac{3}{4}$ inch long. Lowest peduncle $\frac{1}{2}$ to 1 inch long. Fruit $\frac{1}{6}$ inch long.

C. limosa is certainly very closely allied to *C. irrigua*, but is more slender, less caespitose, and has the leaves much narrower, deeply channelled, more or less involute, and much more glaucous than in *C. irrigua*. The male spike in *C. limosa* is more erect, and at a greater distance from the uppermost female spike. The female spikes are rarely more than 2 in number, and though the extreme dimensions are the same in both plants, yet the average length of the spikes in *C. limosa* is greater than in *C. irrigua*; they are also more abrupt at the base, from the absence of male spikes at their base. The bracts in *C. limosa* are much shorter, more slender, often setaceous. The glumes are broader, shorter, and more abruptly pointed, generally paler, and very often with the midrib green. The fruit is narrower and rather more distinctly nerved. The nut also is narrower than in *C. irrigua*.

Narrow-leaved Mud Sedge.

French, *Carex des fanges*. German, *Schlamm-Segge*.

SPECIES XXXIV.—**CAREX RARIFLORA.** *Sm.*

PLATE MDCXLIX.

C. limosa var. *rariflora*, *Wahl.* *Kunth*, Enum. Plant. Vol. II. p. 461.

Rootstock creeping, the branches usually with single stems at the apex, and rather long stolons. Stem erect, rather slender, stiff, bluntly triangular, smooth throughout. Leaves erect, rather flaccid, much shorter than the stem, flat, narrowly linear with short rough-edged triquetrous points, bright green, scarcely glaucous. Male spike 1, linear-fusiform. Female spikes 2 or 3, rather remote, or 2 of them approximate, on rather long capillary stalks, ultimately pendulous, oblong-cylindrical, lax- and few-flowered. Lowest bract setaceous or more rarely foliaceous, not reaching to the base of the

male spike, not sheathing, with 2 long adnate auricles at the base with short free tips. Glumes of the female flowers roundish-ovate, obtuse or rarely apiculate, reddish-black, with the midrib and margins pale or chestnut, wrapped round the fruit, as long as and broader than the fruit. Fruit erect, subsessile, elliptical, trigonous-ovoid, not inflated, very faintly ribbed, smooth, glaucous green, very gradually acuminate into an extremely short deflexed entire point or beak. Stigmas 3. Nut pale brown, broadly oval, bluntly trigonous, very shortly mucronate, closely covered by the perigynium.

In bogs and on mountains. Very local. Abundant on the table-land between the counties of Aberdeen and Forfar. Glen Dole and Glen Camness, Clova; Loch-na-gar, Aberdeen; Cairngorm, Banff; said to occur also in Moray, and possible also in Sutherland.

Scotland. Perennial. Summer.

Stem 3 to 12 inches high, stouter in proportion than that of *C. limosa*. Leaves short, confined to the base of the stem and to the barren shoots. Male spike about $\frac{1}{2}$ inch long. Female spikes $\frac{3}{4}$ to $\frac{5}{8}$ inch long. Fruit $\frac{1}{6}$ inch long, differing from that of *C. irrigua* and *C. limosa* in being but very slightly compressed and with scarcely any perceptible beak. The glumes are much darker in colour than in either of the two preceding species, and they are so broad that they wrap round the fruit, at least the lowest ones do. The lax spikes give the plant an aspect very different from that of *C. limosa* or *C. irrigua*. The auricles are much longer than those of *C. limosa* and considerably longer than those of *C. irrigua*. The herbaceous point of the lowest bract is sometimes very short and subsetaceous, and is wanting altogether except to the lowest female spike. Very frequently 2 of the female spikes spring from nearly the same height on the stem; this is particularly the case when there are 3 spikes, as in that case 2 of them seem always to be placed close together.

In the "Cybele Britannica," Mr. H. C. Watson writes: "Much doubt attaches to the more northerly habitat of Sutherland. Professor Graham, along with Mr. W. A. Stables and Mr. W. H. Campbell, pronounce the plant of Sutherland to be *C. rariflora*; but my specimens from that county, gathered by Dr. G. Macnab and the three other botanists mentioned, appear to be nearer *C. limosa*. Dr. Graham wrote thus in 1833: '*Carex rariflora* observed near Oikle by Mr. Macnab. I afterwards found it by the road opposite the west side of Ben Hope, and Mr. Tyacke found it at the base of Ben Loyal. In 1825 Mr. Holme and I found it in Bateall Moss, Ricconick, and Oldshore. I then considered it *C. limosa*, and I am still inclined to agree with those botanists who can see no good specific distinctions between *C. rariflora*, *C. limosa*, and *C. irrigua*.'"—*Cyb. Brit.* vol. iii. p. 129.

I have not seen Sutherlandshire specimens. Are they not *C. stygia*, *Fries*? It is to be hoped that any botanist visiting Sutherland will endeavour to clear up this point. Very possibly *C. irrigua*, *C. limosa*, *C. stygia*, and *C. rariflora* should be considered merely as sub-species, but the series of specimens in my possession is not sufficient to warrant me in so regarding them. Of *C. stygia*, which fills up the rather wide gap between *C. limosa* and *C. rariflora*, I possess no specimens at all. Should it be necessary to give a name to the super-species, I propose employing that of *C. pulchra*, as *C. limosa* is so completely restricted by modern botanists to one of the forms only.

Loose-flowered Mud Sedge.

GROUP P.—DIGITATÆ.

Rootstock caespitose, with or without short stolons. Spikes approximate, rarely remote. Male spike 1, shortly or very shortly stalked. Female spikes 3 to 5, on short capillary stalks or subsessile, lax, erect or suberect. Glumes light brown or whitish with broad white scarious margins. Lowest bract not foliaceous with a rather long closed sheath. Fruit green, at length pale brown, finely downy, rarely glabrous,* obovate-trigonus, not depressed nor inflated, with an extremely short entire or nearly entire point or beak. Stigmas 3. Nut trigonus or triangular. Flowering stems with leafless sheaths or with a few radical leaves sheathing its base.

SPECIES XXXV.—**CAREX DIGITATA.** *Linn.*

PLATE MDCL.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXL. Fig. 599.

Billot, Fl. Gall. et Germ. Exsicc. No. 870.

Rootstock densely caespitose without stolons. Stem ascending, slender, weak, nearly cylindrical, smooth or very slightly rough immediately below the spikes. Leaves produced only from the barren shoots, slightly recurved, flaccid, shorter than the stem, broadly-linear, flat, slightly rough on the margins, dull green, not glaucous. Male spike 1, very shortly stalked, linear. Female spikes 2 or 3, approximate, or the lowest one remote, on short included stalks, erect or ascending-erect, linear-oblong, lax and 5- to 10-flowered, the uppermost one overtopping the male spike. Bracts longly sheathing, with the sheath closed below and shortly split at the apex, the lowest one with or

* *C. alba*, *Scop.*, certainly belongs to the *Digitatæ*.

without a very short herbaceous subulate lamina, the others without any. Glumes of the female flowers obovate-oblong, obtuse or truncate, subapiculate, wrapped round the fruit, chestnut, with a green or pale keel and very broad white scarious margins, about as long as and broader than the fruit. Fruit erect, indistinctly stipitate, obovate, triquetro-trigonous, not inflated, longly and gradually narrowed at the base, with 1 rib on two of the faces, finely pubescent, green, ultimately olive brown, abruptly acuminate into an extremely short entire straight point or beak. Stigmas 3. Nut brown, stipitate, obovate, triquetrous, apiculate, closely covered by the perigynium.

In woods and bushy places on limestone hills. Local. It occurs on St. Vincent's Rocks, Somerset, and several places in Wilts; in Monmouth; Gloucester; Hereford; Nottingham; and Yorkshire; perhaps also in Devon and Derby.

England. Perennial. Spring.

Rootstock growing in dense tufts, with the sheaths reddish at the base. Stems numerous, produced from the axils of the lower leaves of leafy shoots, 6 to 12 inches high, with 2 or 3 leafless sheaths at the base. Male spike $\frac{3}{8}$ to $\frac{5}{8}$ inch long. Female spikes $\frac{1}{2}$ to 1 inch long, their stalks nearly wholly included in the sheathing bracts which are split at the apex; the lowermost sheath has its broad white scarious margins extended into a short lobe on each side of the subherbaceous central portion, which is produced into a short subulate foliaceous point, but occasionally in the lower and always in the upper sheaths the herbaceous portion is barely excurrent and the scarious margins are not produced into lobes. The male spike and the uppermost female spike have their stalks both inclosed in the bract of the female spike, and the stalk of the male spike being no longer, indeed generally a little shorter, than that of the female spike, while the female spike itself is longer than the male one, the apex of the uppermost female spike extends beyond that of the male: usually all the female spikes are approximate, but occasionally, in luxuriant specimens, the lowest spike is nearly 1 inch distant from the others. The nut is conspicuously stalked, and this stalk is included in the narrowed base of the fruit, the upper part of the nut fitting tightly to the perigynium. The habit of the plant is not unlike that of *Luzula Forsteri* (D. C.).

Fingered Sedge.

French, *Carex digité*. German, *Gefingerte Segge*.

SPECIES XXXVI.—**CAREX HUMILIS.** *Leys.*

PLATE MDCLI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXXXIX. Fig. 595.*Billot, Fl. Gall. et Germ. Exsicc.* No. 683.*C. clandestina, Good. Sm. Engl. Bot. ed. i.* No. 2124; and *Engl. Fl.* Vol. IV. p. 94.*Hook. & Arn. Brit. Fl. ed. viii.* p. 517. *Kunth, Enum. Plant.* Vol. II. p. 476.

Rootstock caespitose, with short thick creeping branches but no elongate stolons. Stem ascending, rather thick, stiff, trigonous, smooth. Leaves produced from the barren shoots and also sheathing the base of the flowering stem, the lowest ones sharply recurved at the base and spreading, the younger ones ascending, stiff, much longer than the stem, very narrowly linear, deeply channelled, very rough on the margins, dark shining green, not glaucous. Male spike 1, shortly stalked, linear-fusiform. Female spikes 3 to 5, remote, on short included stalks, erect, oblong, lax, and 2- to 3-flowered. Bracts shortly sheathing with the sheath closed below and longly split at the apex, the lowest one with or without a very short herbaceous subulate lamina, the others without any. Glumes of the female flowers ovate-oblong, truncate or obtuse, not apiculate, wrapped round the fruit, chestnut, with very broad silvery white scarious margins, as long as and broader than the fruit. Fruit erect, indistinctly stipitate, obovate, trigonous, not inflated, longly and gradually narrowed at the base, with 1 or 2 ribs on 2 of the faces, finely pubescent, green, ultimately olive, gradually acuminate into an extremely short entire slightly inflexed point or beak. Stigmas 3. Nut brown, stipitate, obovate-trigonous, apiculate, closely covered by the perigynium.

On downs and dry hills, chiefly on chalk or limestone soils. Local. It occurs near Blandford, Dorset (Mr. I. C. Mansel, 1868); Brean Down, and St. Vincent's Rocks, Somerset; Salisbury Plain and elsewhere, Wilts; St. Vincent's Rocks and Clifton Downs, Gloucester; and near Ross, Herefordshire.

England. Perennial. Early Spring.

Rootstock somewhat woody, with short creeping branches, each producing a number of tufts at the apex. Flowering stems 1 to 4 inches high, nearly hidden amongst the long rigid leaves, with a few sheathing leaves at the base, a little way above which the lowest fertile spike is placed, and the others distributed over the stem. Male spike $\frac{1}{4}$ to $\frac{3}{4}$ inch long, having a silvery appearance from the broad white margins of the glumes. Female spikes $\frac{1}{6}$ to $\frac{1}{4}$ inch long, nearly

hidden by the large silvery-edged glumelike bracts. Fruit $\frac{1}{8}$ inch long, similar to that of *C. digitata*, but with none of the sides hollowed in the middle, the base less attenuated, and the apex more so, and the beak slightly oblique.

Von Leysser's name, *C. humilis*, is certainly the oldest, and being now generally adopted on the Continent, and in this country by Professor Babington and Mr. Bentham, it is unadvisable to retain Dr. Goodenough's much more expressive name for this plant, *C. clandestina*.

Dwarf Silvery Sedge.

French, *Carex clandestin*. German, *Niedrige Segge*.

GROUP Q.—MONTANÆ.

Rootstock caespitose or more or less creeping, without stolons or with short or elongate stolons. Spikes approximate, or rarely the lower ones remote. Male spike 1, subsessile or very shortly stalked. Female spikes 1 to 4, sessile, or the lower one shortly stalked, dense, erect. Glumes brown, or rarely purplish-black, with or without narrow scarious margins. Lowest bract short, setaceous, or subulate-herbaceous, rarely foliaceous or wholly scarious, without a closed sheath or with a very short one. Fruit green or light brown, obovate-trigonus, not depressed or inflated, downy, very rarely glabrous,* with an extremely short entire or nearly entire point or beak. Stigmas 3. Nut trigonous or triangular, closely covered by the perigynium. Flowering stems with leaves only at the base, but no leafless sheaths.

SPECIES XXXVII.—**CAREX MONTANA.** *Lin.*

PLATE MDCLII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXI. Fig. 633.

Billot, Fl. Gall. et Germ. Exsicc. No. 869.

C. collina, *Willd. Hook. & Arn. Brit. Fl. ed. viii.* p. 518. *Kunth, Vol. II.* p. 437.

Rootstock subcaespitose, with short thick creeping branches, but no elongate stolons. Stem erect, slightly curved at the apex when in fruit, very slender, weak, triangular, rough at the apex. Leaves spreading or ascending, flaccid, those of the barren shoots sometimes as long as the stem, but usually shorter; those on the base of the flowering stem extremely short; all narrowly linear, flat, rough on the margins, dull yellowish-green, not glaucous. Male spike 1, fusiform, sessile. Female

* *C. supina*, *Wahl.* belongs to this group.

spikes 1 to 3, contiguous, or the lowest one approximate, sessile, ascending-erect, ovate-ovoid, rather lax, 2- to 10-flowered. Bracts not sheathing, scarious, the lowest one with or without a setaceous or subulate herbaceous point shorter than its own spike. Glumes of the female flowers broadly ovate or roundish-ovate, obtuse, the lower ones retuse and more or less conspicuously mucronate, wrapped round the fruit, purplish-black, with a green or pale midrib and concolorous margins, shorter but broader than the fruit. Fruit erect-ascending, indistinctly stipitate, oblong-obovate, trigonous, gradually narrowed at the base, conspicuously ribbed, with all the 3 angles prominent, coarsely pubescent, pale green, ultimately olive, very gradually acuminate into a short entire beak. Nut stipitate, pale olive, elliptical, triquetro-trigonous, acuminate.

In heathy fields and in woods, most partial to limestone. Very local. Discovered in 1842 by Mr. William Mitten, in a field between Tunbridge Wells and Eridge, Sussex. Since then it has been found in several places along the course of the Wye, in Gloucester, Monmouth, Hereford, and Worcester.

England. Perennial. Spring.

Rootstock thick, much branched, clothed with the withered bases of the leaves of former years, the branches terminating in several tufts of barren leaves and a few flowering stems 6 to 18 inches high, at first erect, afterwards more or less inclined and drooping, as the fruit increases in size. Leaves of the barren shoots often nearly as long as the stem, $\frac{1}{6}$ to $\frac{1}{8}$ inch wide, with the sheaths red at the base, the upper surface pubescent when young, but the hairs appear to be deciduous as the older leaves are glabrous. Leaves at the base of the flowering stem with the lamina very short and narrow, $\frac{1}{2}$ to 1 inch long. Male spike $\frac{1}{2}$ to $\frac{5}{8}$ inch long; female spikes $\frac{1}{4}$ to $\frac{1}{2}$ inch long. Fruit $\frac{1}{6}$ inch long.

A well-marked species, distinguished from the others of the group *Montanæ* by its greatly thickened shaggy rhizome, purplish-brown sheaths, short approximate spikes with very broad purplish-black obtuse or retuse and mucronated glumes, indistinctly foliaceous bracts, and fruit clothed with shaggy hairs.

Mountain Sedge.

French, *Carex de montagne*. German, *Berg-Segge*.

SPECIES XXXVIII.—**CAREX PILULIFERA.** *Linn.*

PLATE MDCLIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLX.*Billot*, Fl. Gall. et Germ. Exsicc. No. 679.

Rootstock densely caespitose, with no elongate creeping branches or stolons. Stem erect in flower, arching and recumbent in fruit, very slender, weak, triquetrous, very slightly rough at the apex. Leaves recurved-ascending, shorter than the stem; those at the base of the flowering stems a little shorter than the others; all rather stiff, linear or narrowly-linear, flat, rough on the margins, bright green, not glaucous. Male spike 1, sessile, linear-fusiform. Female spikes 3 to 5, approximate, or the lower one a little removed from the rest, sessile, ascending-erect, subglobular-ovoid, dense, 6- to 12-flowered. Bracts not sheathing, the lowest one herbaceous, subulate or foliaceous, longer than its spike, sometimes reaching to or extending beyond the apex of the male spike, but usually not so long. Glumes of the female flowers ovate, acuminate or acuminate-cuspidate, all very acute, concave, purplish-brown, with green midribs and narrow white scarious margins, as long as or a little longer than and as broad as the fruit. Fruit erect-ascending, stipitate, roundish-obovate, subglobose-turbinate, scarcely trigonous, abruptly narrowed at the base, with only 2 out of the 3 angles prominent, with 2 ribs in the uppermost face, finely pubescent, green, ultimately greenish-olive, abruptly acuminate into a short slightly bifid beak. Stigmas 3. Nut scarcely stipitate, yellowish, roundish-turbinate, scarcely trigonous, obtuse.

On heaths and pastures, more rarely in woods. Common, and generally distributed.

England, Scotland, Ireland. Perennial. Early Summer.

Plant growing in large dense tufts. Stems 4 to 18 inches long, at length arching so much that the fruit lies on the ground. Leaves about $\frac{1}{6}$ to $\frac{1}{8}$ inch wide; those of the barren shoots longer than those at the base of the flowering stem, but not conspicuously so as in *C. montana*. Male spike $\frac{1}{4}$ to $\frac{1}{2}$ inch long; female spikes $\frac{1}{6}$ to $\frac{1}{4}$ inch long. Fruit $\frac{1}{6}$ inch long, nearly globose, with 2 elevated lines on the upper surface, immediate within the 2 angles which bound the upper face, but the third or lowest angle is generally not even indicated, the back of the fruit being rounded off and very tumid.

Round-headed Sedge.

French, *Carex à pilules*. German, *Pillenträgende Segge*.

SPECIES XXXIX.—**CAREX ERICETORUM.** *Poll.*

PLATE MDCLIV.

*Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXII. Fig. 636.**Billot, Fl. Gall. et Germ. Exsicc. No. 680.**C. ciliata, Willd. Kunth, Enum. Plant. Vol. II. p. 438.*

Rootstock scarcely caespitose, with short slender creeping branches, and rather short stolons. Stem ascending, slightly curved but not recumbent in fruit, slender, stiff, trigonous, smooth. Leaves recurved-spreading, shorter than the stem, those at the base of the flowering stems as long as those of the barren shoots, stiff, all narrowly linear, nearly flat, rough on the edges, green, shining, not glaucous. Male spike 1, subsessile, oblong, blunt, with the glumes oval-oblong, obtuse, dark brown, with broad silvery margins and apices. Female spikes 2 to 3, contiguous, subsessile, or the lower one shortly stalked, erect, oval-ovoid, dense, 6- to 12-flowered. Bracts scarcely sheathing or very shortly so, the lowest one not herbaceous, purplish brown, with a subulate brown ciliated point, shorter than its spike. Glumes of the female flowers broadly oval, very obtuse, dark brown, with a concolorous midrib and broad silvery-white ciliated margins about as long and as broad as the fruit. Fruit ascending, indistinctly stipitate, oblanceolate, turbinate-trigonous, abruptly narrowed at the base, with the 3 angles prominent, with a rib on each of the 2 lower faces, finely pubescent, olive, with a purplish-brown apex, abruptly acuminate into a scarcely perceptible entire mouth or beak. Stigmas 3. Nut not stipitate, pale yellow, oval-elliptical, bluntly trigonous, without a scabrous disk surrounding the base of the style.

On dry chalky banks. Very rare. In Britain the only known station is on the Gogmagog Hills, near Cambridge, where it was gathered by Professor Babington and Mr. J. Ball in 1833, but remained unnoticed until 1861. It will probably be found elsewhere.

England. Perennial. Early Summer.

Rootstock much branched, extensively creeping, the branches slender but frequently so short that a tuft is formed. Stems of the British specimens 2 to 4 inches high, but on the Continent they are often 6 inches to 1 foot long. Male spike about $\frac{1}{2}$ inch long, very thick, conspicuous from the broad silvery edges of the glumes; female spikes about $\frac{3}{4}$ inch long. Nut about $\frac{1}{7}$ inch long, with an extremely short beak. Glumes of the female flowers remarkable for the minute

ciliae which fringe their apices; these ciliae are best seen while the plant is in flower, as they usually disappear by the time the fruit is ripe.

On the Continent this plant is chiefly found in sandy soil, but in the station near the Woolstreet, Cambridge, where I was shown the plant by Professor Babington in 1863, it grows on dry chalky soil.

The lesser figure in Sowerby's drawing of *Carex præcox* for the first edition of "English Botany," has been drawn from C. Ericetorum, and afterwards altered by Smith. It may be presumed that Sowerby had gathered the plant somewhere near London, but there are no specimens in his herbarium in the British Museum.

In cultivation the plant in Balmuto Garden forms a large rather loose tuft.

Silvery Heath Sedge.

French, *Carex des bruyères*. German, *Heide-Segge*.

SPECIES XL.—**CAREX PRÆCOX.** Jacq.

PLATE MDCLV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXI. Fig. 634.

Billot, Fl. Gall. et Germ. Exsicc. No. 681.

Rootstock not caespitose, with short or elongate slender creeping branches, and short or elongate stolons. Stem erect or ascending, nearly straight in fruit, slender, stiff, obtusely trigonous, smooth, or slightly rough at the apex. Leaves recurved-spreading or ascending, shorter than the stem, those at the base of the flowering stems as long as those of the barren shoots; all stiff, narrowly linear, nearly flat, rough on the edges, green, shining, not glaucous. Male spike 1, very shortly stalked, oblong-fusiform, subacute, with the glumes lanceolate-oblong, acute or subacute, orange-brown, concolorous or with very narrow silvery margins and apices. Female spikes 2, more rarely 3, contiguous, sessile or subsessile, or the lowest one shortly stalked and occasionally a little way below the others, erect, oblong-ovoid or oblong, dense, 8- to many-flowered. Bracts scarcely sheathing or very shortly so, the lowest one scarious, very pale brown, with a herbaceous strip on the back ending in a subulate or setaceous sub-ciliated lamina usually equalling its spike, but never extending to the summit of the male spike. Glumes of the female flowers ovate, acuminate or cuspidate, acute, reddish-brown, with a green midrib and concolorous margins, which are not ciliated, about as long and as broad as the fruit. Fruit ascending-erect, indistinctly stipitate, rhombic-oblanceolate, trigonous, gradually narrowed at the base, the 3

angles prominent, with a faint rib on each of the 2 lower faces, finely pubescent, olive, with a reddish-brown apex, gradually acuminate into a scarcely perceptible entire point or beak. Stigmas 3. Nut dark brown, not stipitate, obovate, bluntly trigonous, with a white membranous disk surrounding the base of the style.

On dry banks and pastures. Common, and generally distributed.

England, Scotland, Ireland. Perennial. Spring.

Rootstock and leaves very similar to those of *C. Ericetorum*. Stems stiffer and usually rather more erect, 3 to 15 inches high. Male spike $\frac{1}{2}$ to 1 inch long, not so blunt as that of *C. Ericetorum*, and differing in the orange-brown colour of the acute glumes, which are either wholly destitute of a silvery margin or have one so narrow that it does not conspicuously affect the colour of the spike; female spikes sometimes very similar to those of *C. Ericetorum*, but usually longer and more cylindrical, varying from $\frac{1}{4}$ to $\frac{3}{4}$ inch long. Lowest bract with the clasping auricles much paler than in *C. Ericetorum*, and the point herbaceous, varying from $\frac{1}{4}$ to 1 inch long, or even more. Glumes of the female flowers tapering towards the apex either gradually or abruptly, reddish-brown or chestnut, without the silvery-white ciliated margins of those of *C. Ericetorum*, and with the midrib excurrent, not ceasing before the apex. Fruit about the size of that of *C. Ericetorum*, but much more acuminate towards the apex, and without any purplish tinge. Nut chocolate brown, more narrowed towards the base, more evidently shagreened and broader than in *C. Ericetorum*, with a small membranous disk surrounding the base of the style.

Vernal Sedge.

French, *Carex précoce*. German, *Frühzeitige Segge*.

SPECIES XLI.—**CAREX TOMENTOSA.** *Lin.*

PLATE MDCLVI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXIII. Fig. 638.

Willd. Fl. Gall. et Germ. Exsicc. No. 1567.

Rootstock subcaespitose, with slender elongate stolons. Stem erect, always straight, slender, stiff, triangular, rough towards the apex. Leaves erect, those at the base of the flowering stems shorter than the stem, and shorter than those of the barren shoots, rather flaccid; all linear, nearly flat, rough on the edges, pale green, dull, slightly glaucous. Male spike shortly stalked, fusiform-cylindrical, acute, with the glumes ovate-oblong, acute, orange-brown without broad silvery margins and apices. Female spikes 1 or 2, very rarely 3, approximate, subsessile, erect, oblong or cylindrical-oblong, dense,

many-flowered. Bracts scarcely sheathing, scarious, whitish, with a broad herbaceous strip on the back ending in a subulate or foliaceous not ciliated lamina exceeding its spike and occasionally extending to the summit of the male spike. Glumes of the female flowers broadly ovate, acuminate or acute, purplish-brown, with a broad green midrib and concolorous margins, which are not ciliated, shorter and narrower than the fruit. Fruit ascending-erect, indistinctly stipitate, obovate-turbinate, bluntly trigonous, gradually narrowed at the base, the 3 angles blunt, with a nearly obsolete rib on each of the two lower faces, densely tomentose, greenish-white, with a pale reddish-brown apex, very abruptly acuminate into a very short slightly bifid point or beak. Stigmas 3. Nut pale yellowish-olive, obovate, trigonous, mucronate, without a membranous disk surrounding the base of the style.

In meadows (on the Continent in woods). Very rare. Water Meadows, Marston Maisy, in the north-eastern division of Wiltshire; "East Gloucester?" (Mr. H. C. Watson, *Comp. Cyb. Brit.* p. 377).

England. Perennial. Summer.

Leaves $\frac{1}{6}$ inch broad. Stems 8 to 18 inches high. Male spike $\frac{1}{2}$ to 1 inch long. Female spikes $\frac{1}{4}$ to $\frac{3}{4}$ inch long. Fruit $\frac{1}{12}$ inch long, with much coarser and whiter down than in *C. præcox*, and a wider-mouthed beak.

I have the plant in cultivation from Wiltshire, received from Mr. T. B. Flower. In the garden it forms rather large dense tufts, with numerous stems, and throws out elongate stolons which do not flower until they have formed a tuft similar to the parent plant.

Downy-fruited Sedge.

French, *Carex cotonneux*. German, *Filzfrüchtige Segge*.

GROUP R.—PALLESCENTES.

Rootstock caespitose, without stolons, or with short ones. Spikes approximate or rarely remote. Male spike 1, very shortly stalked, rarely longly stalked, sometimes with a few female flowers. Female spikes 2 to 5, on slender more or less elongate stalks, rather dense, erect or slightly inclined. Glumes greenish or reddish-olive, ultimately nearly white. Lowest bract foliaceous, usually longer than the stem, without a closed sheath, or with a very short one. Fruit permanently green, ovoid, obtuse, scarcely trigonous, not depressed, moderately inflated, pellucid, shining, faintly ribbed, with a very

minute often obsolete point but no proper beak. Stigmas 3. Nut trigonous, loosely covered by the perigynium.

Flowering stems leafy in the lower half or third.

SPECIES XLII.—**CAREX PALLESCENS.** *Linn.*

PLATE MDCLVII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLI. Figs. 617 and 618.

Billot, Fl. Gall. et Germ. Exsicc. No. 1572.

Rootstock loosely caespitose, without stolons. Stem erect, slightly drooping at the apex in fruit, slender, weak, triangular, rough and pubescent on the angles towards the apex. Leaves erect, shorter than or equalling the stem, flaccid, flat, rough on the edges, slightly pubescent, pale yellowish-green, not glaucous. Male spike 1, shortly stalked, linear-fusiform, scarcely exceeding the uppermost female spike. Female spikes 2 to 3, approximate, or the lower one rather remote, longly stalked, erect or slightly inclined, ovoid or oblong, rather dense, many-flowered. Bracts not sheathing, or scarcely sheathing, foliaceous, the lowest one exceeding the male spike. Glumes of the female flowers lanceolate-ovate, acuminate-cuspidate and very acute, pale olive, more or less tinged with reddish-brown, fading to white, subpellucid. Fruit ascending, erect, sessile, ovate-oblong, very obtuse, scarcely trigonous, slightly inflated, obsoletely ribbed, shining, pale green, with a very minute entire point. Stigmas 3. Nut pale yellow, oblanceolate-elliptical, with a short abrupt beak.

In moist woods and meadows. Not very common, but generally distributed, extending north to Sutherland. Rather local, but widely distributed in Ireland.

England, Scotland, Ireland. Perennial. Summer.

Plant growing in small rather loose tufts. Stems 1 to 2½ feet high, leafy for about one-third of their length from the base, the upper leaves longer than the lower, the lowest sheaths without a lamina, which in the broadest leaves is $\frac{1}{5}$ to $\frac{1}{4}$ inch wide. Male spike $\frac{1}{2}$ to 1 inch long. Lowest female spike about $\frac{1}{2}$ inch long, on a stalk of $\frac{1}{2}$ to 1 inch long, upper stalks shorter and on shorter stalks. Glumes of the male spike pale orange-brown; those of the female spikes very thin, and ultimately semi-transparent. Fruit $\frac{1}{6}$ inch long, very slightly enlarged towards the apex, remarkable for its rounded blunt apex, with a small apiculus instead of a beak.

Sometimes the male spike has a few female flowers at the apex.

Carex undulata (*Kunze*) is a form of *C. pallescens*, with the lowest

bract transversely crimped at the base. I have gathered this form in the Den of Lawers, Breadalbane, Perth, but it does not deserve to be considered even as a variety.

Pale Sedge.

French, *Carex pâle.* German, *Blasse Segge.*

GROUP S.—PANICEÆ.

Rootstock creeping, with short or elongate stolons. Spikes remote or distant, rarely approximate. Male spike 1, stalked, usually longly so, sometimes with a few female flowers, sometimes with a small male or androgynous spike at the base. Female spikes 1 to 6, rather lax, or more rarely rather dense, erect, on short included stalks, the lowest ones usually on long and exserted stalks. Glumes of the female flower purplish-brown or brown, commonly with pale margins. Lowest bract foliaceous, rather short, rarely reaching even the base of the male spike, with a long closed sheath. Fruit glaucous green, ultimately yellowish-olive or cream colour, ovoid, acuminate, subtrigonus, not depressed, inflated, smooth, dim or slightly shining, faintly or obsoletely ribbed, with a short or rather short smooth entire or slightly notched straight or deflexed beak. Stigmas 3, rarely 2. Nut trigonus (rarely lenticular), loosely covered by the perigynium.

Stems leafy for only a short distance above the base. Leaves rather stiff.

SPECIES XLIII.—*CAREX PANICEA.* Linn.

PLATE MDCLVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXLV.

Billot, Fl. Gall. et Germ. Exsicc. No. 1570.

Rootstock extensively creeping, with short or elongate stolons. Stem erect, often slightly curved in fruit, rather slender, stiff, very bluntly trigonus, smooth, glaucous. Leaves suberect, much shorter than the stem, rather stiff, linear, flat, slightly rough on the margins, very glaucous. Male spike 1, usually longly stalked, subcylindrical, sometimes with a small second male or male-tipped spike at its base. Female spikes 2 to 3, remote or distant, the lowest with a long stalk more or less exserted beyond the sheath of its bract, the upper ones with short included stalks, erect, oblong or cylindrical, rather lax, especially at the base, many-flowered. Bracts sheathing, foliaceous, the lowest one longer than its spike, but rarely reaching to

the base of the spike next above it, and never reaching that of the male spike. Glumes of the female flowers oval-ovate, subacute, purplish-brown or reddish-black, with a green stripe on the midrib and pale scarious margins, as long and as broad as the fruit, but exposing it by being ultimately spreading. Fruit ascending, sessile, rhomboidal-ovoid, pointed, scarcely trigonous, slightly inflated, very indistinctly nerved, dim, glaucous-green, sometimes tinged with purplish-brown, fading to dull yellowish-olive, rather abruptly acuminate into a short deflexed smooth entire or obsoletely notched beak. Stigmas 3. Nut pale brown, obovate-turbinate, bluntly triquetrous, shortly beaked.

In meadows and marshy places. Common, and generally distributed.

England, Scotland, Ireland. Perennial. Early Summer.

Stems 6 inches to 2 feet high, glaucous, with a few leaves at the base, and with the lowest bract often growing from the middle of the stem, though sometimes much higher, especially in the mountain forms. Leaves $\frac{1}{8}$ to $\frac{1}{6}$ inch broad, very similar to those of *C. glauca*, but less rigid. Male spike $\frac{1}{2}$ to $1\frac{1}{4}$ inch long; female spikes $\frac{1}{2}$ to $1\frac{1}{4}$ inch long, the lowest one often very lax at the base and upon a stalk longer than the sheath of its bract so as to be exerted. Fruit $\frac{1}{6}$ inch long, with a hump at the base on the outer side, and a more gradual bulging towards the apex on the side next the axis of the spike. Nut larger than in most of the British species, nearly $\frac{1}{8}$ inch long.

In mountainous districts a form occurs with the leaves rather less glaucous; the glumes darker with the dorsal green stripe not broader than the midrib and the scarious margins very narrow; and the fruit more or less tinged with purplish-brown.

C. panicea has much the habit of *C. glauca*, but differs in the sheathing bracts, erect spikes, and oblique swollen fruit.

Pink-leaved Sedge.

French, *Carex panic.* German, *Hirsenartige Segge.*

SPECIES XLIV.—CAREX VAGINATA. *Tausch.*

PLATE MDCLIX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXLVI. Fig. 609.

Billot, Fl. Gall. et Germ. Exsicc. No. 3481.

C. panicea, var. β , *sparsiflora*, *Wahl. Kunth, Enum. Plant.* Vol. II. p. 460.

C. sparsiflora, *Steud. Fries, Summ. Veg. Scand.* p. 71.

C. Mielchoferi, *Sm. Engl. Bot. ed. i.* No. 2293; and *Engl. Fl.* Vol. IV. p. 98 (non *Schl.*)

C. phæostachya, *Sm. Engl. Fl.* Vol. IV. p. 99. *E. Forster*, in *Engl. Bot. Suppl.* No. 2731.

Rootstock creeping, with long stolons. Stem erect, rather slender,

stiff, very bluntly trigonous, smooth, not glaucous. Leaves suberect or slightly spreading-recurved, much shorter than the stem, stiff, broadly linear, flat, rough on the margins, bright green, not glaucous. Male spike 1, fusiform or clavate-fusiform, usually longly stalked, solitary. Female spikes 1 or 2, rarely 3, remote, the lowest one with a longer stalk wholly included in or exerted beyond the sheath of its bract, the upper ones with a short included stalk, erect, ovoid-oblong or oblong-cylindrical, rather lax, especially at the base, 3- to 10-flowered. Bracts sheathing, foliaceous, the lowest one equalling or falling short of its own spike, and but rarely exceeding it. Glumes of the female flowers oblong-oval, obtuse, reddish-brown, with a narrow green stripe on the midrib and concolorous margins, shorter than but as broad as the fruit, and applied to it even when it is ripe. Fruit ascending, sessile, oval-ovoid, pointed, scarcely trigonous, slightly inflated, without evident nerves, somewhat shining, green, ultimately greenish-olive, abruptly acuminate into a rather short deflexed slightly notched beak. Stigmas 3. Nut pale yellow, elliptical-turbinate, bluntly triquetrous, shortly beaked.

On rocky ledges on mountains. Rather local. Frequent on the Breadalbane Mountains, in Perthshire; at the head of Glen Fiadh, and at the White Water, Clova, Forfar; Glen Callater, Loch-na-gar, Ben Macdui, Cairntowl, and other mountains of Braemar, Aberdeenshire. It is reported on good authority from Ben Voirlich, Dumbarton; Cairngorm, Moray; and Speacanconick, Sutherland.

Scotland. Perennial. Summer.

Very similar to *C. panicea*, but with longer stolons, stouter stems 6 to 15 inches high, with the lowest bract usually much above the middle. Leaves thicker, broader (often $\frac{1}{4}$ inch), shining green, not at all glaucous. Male spike $\frac{3}{8}$ to $\frac{3}{4}$ inch long, but usually about $\frac{1}{2}$ inch, much thicker in the middle than that of *C. panicea*, and with the glumes narrower, orange-brown instead of purplish-black, with a green midrib; female spikes $\frac{1}{4}$ to $\frac{3}{4}$ inch long, with shorter stalks and much blunter glumes than in *C. panicea*. Fruit $\frac{1}{6}$ inch long, greener, more regular in figure, and with a considerably longer more cylindrical less deflexed and more evidently notched beak than in *C. panicea*; and on account of the fruit bulging less at the base when full grown, the glumes are not forced into a spreading position. The nut is paler coloured and narrower, but the beak is certainly not thickened upwards, as it is sometimes said to be.

Short Brown-spiked Sedge.

German, *Lockerblüthige Segge.*

GROUP T.—FRIGIDÆ.

Rootstock subcaespitose or slightly creeping, with short stolons. Spikes rather approximate or the lower one remote. Male spike 1, shortly stalked, sometimes with a few female flowers, thick, solitary. Female spikes 2 to 4, dense, occasionally with a few male flowers at the apex, ultimately pendulous, on exserted stalks, or sometimes the uppermost ones subsessile. Glumes of the female flowers reddish-black, concolorous or with the midrib green or red. Lowest bract foliaceous or subfoliaceous, not reaching to the apex of the male spike and generally much shorter, with a long closed sheath. Fruit dark brown or nearly black, usually green on the margins, ovate or lanceolate, pointed, trigonous or depressed-trigonous, moderately inflated, smooth except on the margins, dim or slightly shining, obsoletely ribbed, with a rather short or long rough notched or bidentate straight beak. Stigmas 3. Nut triquetrous, loosely covered by the perigynium.

Stem leafy only at the base or in the lower part. Leaves rather narrow, firm.

SPECIES XLV.—**CAREX USTULATA.** *Wahl.*

PLATE MDCLXIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCL. Fig. 615.

Rootstock shortly creeping, with short stolons. Stem erect, rather stout, stiff, trigonous, smooth throughout, leafy only at the base. Leaves erect, much shorter than the stem, firm, linear, flat, rough on the margins, green, not glaucous. Male spike 1, shortly stalked, fusiform-ovoid, exceeding the female spike. Female spikes 2 to 4, rather approximate, on long exserted stalks, pendulous, ovoid, narrowed at the base, dense, many-flowered. Bracts sheathing, subfoliaceous, the lowest one with a short subulate lamina not exceeding the stalk of its spike. Glumes of the female flowers ovate, acute or slightly acuminate, purplish-black, concolorous, a little shorter and narrower than the fruit. Fruit ascending, sessile, ovate, pointed, depressed-trigonous, moderately inflated, scarcely ribbed, quite smooth, dim, chestnut-black, rather gradually acuminate into a short straight slightly rough-edged bidentate beak, one-fourth as long as the length of the rest of the fruit. Stigmas 3. Nut pale yellow, elliptical-tri-quetrous, acuminate at each end, apiculate.

In wet places on mountains. Very rare, and perhaps extinct. Said to have been found on Ben Lawers by Mr. George Don.

Scotland (extinct?). Perennial. Summer.

Stems 6 inches to 1 foot high. Leaves about $\frac{1}{6}$ inch broad or more, sheathing the base of the stem, the upper part of which is quite naked. Male spike $\frac{3}{8}$ to $\frac{1}{2}$ inch long; female spikes $\frac{3}{8}$ to $\frac{3}{4}$ inch long, the lowest one with a stalk usually exceeding its own length, about half of it contained in the sheath of the bract, and the upper extremity commonly with 1 or 2 empty glumes immediately below the spike. Fruit $\frac{1}{6}$ inch long. Nut not half the length of the perigynium.

Specimens of *C. ustulata* were distributed by Mr. George Don, and said by him to have been found on Ben Lawers. I possess one of these specimens labelled 1810, but since then the plant has not been found. The specimen alluded to has micaceous soil adhering to the roots, and it may therefore be assumed that it is not of garden origin. Don has never been accused of distributing foreign specimens of plants as British, though he often labelled specimens from his garden as being from stations where he erroneously believed he had seen the same species growing.

Scorched Alpine Sedge.

GROUP U.—TENUES.

Rootstock subcæspitose or slightly creeping, with or without short stolons. Spikes approximate or remote. Male spike 1, stalked, sometimes longly so, slender, solitary. Female spikes 2 to 4, lax, ultimately inclined or drooping, more rarely erect, on long capillary exserted stalks. Glumes of the female flowers orange- or purplish-brown or olive, always with a green stripe on the back and broad pale scarious margins. Lowest bract foliaceous or subfoliaceous, rarely reaching to the apex of the male spike and generally much shorter, with a long closed sheath. Fruit pale brown or olive, ovoid-trigonus, pointed, moderately inflated, smooth (rarely slightly hispid), shining, faintly ribbed or without ribs, with a rather long rough or smooth entire or membranous and bilobed more or less deflexed beak. Stigmas 3. Nut triquetrous, loosely covered by the perigynium.

Stem leafy only at the base or in the lower part. Leaves narrow, firm.

SPECIES XLVI.—**CAREX CAPILLARIS.** *Linn.*

PLATE MDCLXII.

*Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXLI. Fig. 600.**Billot, Fl. Gall. et Germ. Exsicc. No. 2962.*

Rootstock rather long, caespitose at the apex, without stolons. Stem erect, usually slightly curved, slender, rather stiff, very bluntly trigonous, smooth, leafy at the base, and usually with one leaf sheathing it up to the middle. Leaves erect, much shorter than the stem, firm, narrowly linear, flat, rough on the margins, green not glaucous. Male spike 1, rather shortly stalked, clavate-linear, shorter than the uppermost female spikes. Female spikes 2 to 4, approximate, 2 or sometimes 3 of them from one sheath, on long capillary greatly exerted stalks, inclined or pendulous, oblong, lax, 3- to 10-flowered. Bracts sheathing, the lowest one with a short linear foliaceous lamina equalling or extending beyond the male spike, the uppermost one small and wholly scarious. Glumes of the female flowers oblong-oval, obtuse or obliquely truncate and apiculate, very pale orange brown, with a green midrib and broad white scarious margins and apices, ultimately nearly white, shorter than but as broad as the fruit, caducous. Fruit ascending, sub-tipitate, oval-lanceolate, acuminate at each end, pointed, bluntly trigonous, moderately inflated, not ribbed, quite smooth, slightly shining, olive-green, more or less tinged with orange-brown, gradually narrowed into a short slightly deflexed entire small- and membranous-mouthed nearly smooth beak, about one-third of the length of the rest of the fruit. Stigmas 3. Nut very pale olive, elliptical-obovate, narrowed at the base, triquetrous, abruptly acuminate into a small apiculus.

On damp grassy places and ledges of rock on mountains, especially those composed of mica-slate and limestone. Not uncommon. In England it occurs in Teesdale, both on the York and Durham side of the Tees, and perhaps in Cumberland. In Scotland on a hill near Hartfell, Dumfries; frequent on the Clova and Breadalbane Mountains in Forfar and Perth; in Aberdeenshire it is scarce, but it occurs in Glen Callater, on Little Craighindal, and on Craig Koynach, at the Castleton of Braemar; it grows also in Ross and Sutherland, and is said to have been found in Shetland, but is absent from Orkney.

England, Scotland. Perennial. Summer.

Plant growing in small tufts with a short oblique rhizome thickly clothed with the decayed bases of the leaves of former years, and dividing at the apex into several very short branches clothed in a similar

manner. Stems 2 to 10 inches high. Leaves not above $\frac{1}{2}$ inch broad, very numerous at the base of the stem, and often 1 about the middle. 2 or 3 of the spikes are included in the sheath of 1 bract, and 1 female spike springs from a membranous bract above these; more rarely there is an additional spike from a sheathing bract some distance below the others. Male spike $\frac{1}{4}$ to $\frac{1}{2}$ inch long; female spikes $\frac{1}{4}$ to $\frac{1}{2}$ inch long, on very slender stalks, longer than the spike. Fruit, including its stalk and beak, about $\frac{1}{6}$ inch long.

Capillary Sedge.

French, *Carex capillaire*. German, *Haarhalmige Segge*.

GROUP V.—MAXIMÆ.

Rootstock densely caespitose, without stolons. Spikes remote. Male spike 1, stalked, arching, sometimes with a second male or androgynous spike at its base. Female spikes 4 to 7, very dense, especially towards the apex, often with a few male flowers at the apex, arching-pendulous, on comparatively short included stalks, the lowest one usually on a longer and slightly exerted stalk. Glumes of the female flowers purplish-brown with a broad green stripe on the back. Lowest bract foliaceous, rather long, reaching to the base of the male spike, with a long closed sheath. Fruit green, ovoid, shortly acuminate, subtrigonal, not depressed, moderately inflated, smooth, slightly shining, faintly ribbed, with a rather short smooth notched deflexed beak. Stigmas 3. Nut trigonal, loosely covered by the perigynium.

Stem leafy throughout. Leaves firm, rigid, very broadly linear.

SPECIES XLVII.—**CAREX PENDULA.** *Huds.*

PLATE MDCLX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXLIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 1973.

C. maxima, Scop. Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 880. Gren. & Godr. Fl. de Fr. Vol. III. p. 405.

C. Agastachys, Ehrh. Reich. Fl. Germ. Excurs. p. 71.

Rootstock densely caespitose, without stolons. Stem erect or ascending-erect, stout, stiff, triquetrous, smooth. Leaves ascending-erect, rather shorter than the stem, firm, very broadly linear, flat, rough on the margins, green and shining above, glaucous beneath. Male spike 1, very long, cylindrical, slightly thickened towards and sometimes female at the apex, rather shortly stalked, sometimes with a small second male or androgynous spike at the base. Female spikes 4 to 7, remote, the upper ones shortly stalked, the lower ones with a

short included stalk, the lowest with a long stalk more or less exerted beyond the sheath of its bract, arching-pendulous, very longly cylindrical, slightly thickened towards the apex, very dense, with innumerable flowers. Bracts sheathing, foliaceous, the lowest one much longer than its spike, and commonly reaching nearly to the base of the male spike. Glumes of the female flowers oval-lanceolate, cuspidate-mucronate or subaristate, bright purplish-brown, with a broad green stripe on the midrib and very narrow scarious margins, shorter and narrower than the fruit. Fruit ascending-spreading, sessile, irregularly ovoid, more curved above than below, pointed, bluntly trigonous, moderately inflated, rather indistinctly nerved, slightly shining, pellucid-green, rather abruptly acuminate into a short deflexed smooth notched beak. Stigmas 3. Nut pale yellow, oval-triquetrous, acuminate at each end.

In moist woods and damp shady hedgebanks, and by the sides of ditches. Rather common, and generally distributed in England. Rare in Scotland, extending north to Aberdeen, Banff, Elgin, and Lanark. Rather rare in Ireland, and chiefly found in the south and east.

England, Scotland, Ireland. Perennial. Summer.

Plant growing in large round tufts, with numerous flowering stems and barren shoots. Stems 2 to 6 feet high, with leaves at the base and also at intervals throughout the stem. Leaves $\frac{1}{2}$ to nearly 1 inch broad, those of the barren shoots often 2 feet long or more, those on the flowering stem shorter. Bracts resembling the stem leaves, becoming smaller as they are placed higher on the stem. Male spike 3 to 6 inches long, not unfrequently female at the apex. Female spikes 4 to 7 inches long and about as thick as a swan's quill when in fruit, but while in flower about as thick as a crow's quill. Fruit about $\frac{1}{2}$ inch long, with a hump on the upper side towards the apex so that a vertical section would present a half-obovate figure.

A very handsome plant, unlike any of the other British Carices. The leaves have some resemblance to those of *C. riparia*, but there is no other similarity between the two species.

Great Pendulous Sedge.

French, *Carex à épis pendants*. German, *Hängende Segge*.

GROUP W.—SYLVATICÆ.

Rootstock subcaespitose or shortly creeping, sometimes with the branches subchordorrhizal, with or without elongate stolons. Spikes remote or distant. Male spike 1, rather shortly stalked, sometimes

with a few female flowers intermixed, slender, solitary. Female spikes 3 to 6, lax, on long capillary exserted stalks, or the upper ones on shorter stalks or subsessile, erect, frequently ultimately inclined or drooping and more or less arching. Glumes of the female flowers green or reddish-olive with a green midrib, usually with broad whitish scarious margins. Bracts all foliaceous, long, but rarely reaching the apex of the male spike, and generally much shorter; the lowest ones (or all) with long closed sheaths. Fruit green or ultimately olive, usually more or less stipitate, variable in shape, slightly or scarcely at all inflated, smooth, usually shining, rarely dim, usually ribbed, with a beak of variable length. Stigmas 3. Nut trigonous or triquetrous, rather loosely covered by the perigynium.

Stem leafy throughout, the lowest sheaths sometimes without a lamina. Leaves rather broad.

SPECIES XLVIII.—**CAREX STRIGOSA.** *Huds.*

PLATE MDCLXI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXLII. Fig. 602.

Billot, Fl. Gall. et Germ. Exsicc. No. 872.

Rootstock subcaespitose, with shortly creeping thick branches, each of which produces several flowering stems and barren shoots from its apex. Stem erect, rather slender, weak, trigonous, smooth and leafy throughout, but a few of the lowest sheaths without a lamina. Leaves shorter than the stem, flaccid, broadly linear, those of the barren shoots much longer and broader than those on the stem, all flat, slightly rough on the margins towards the apex, pale green, not glaucous. Male spike 1, more or less conspicuously stalked, linear-cylindrical, narrowed at the base, with long lanceolate-linear shortly acuminate and acute glumes. Female spikes 3 to 6, remote, the lowest on long greatly exserted capillary stalks, and the upper on short slightly exserted stalks, suberect, at length slightly curved outwards, linear-cylindrical, very lax, very many-flowered. Bracts (or at least all except the uppermost) sheathing, foliaceous, with the lamina exceeding its own spike, but not reaching the apex of the male spike. Glumes of the female flowers oblong-lanceolate or oblong-ovate, acute, pale green with very broad white scarious margins, ultimately nearly wholly white, shorter than but as broad as the fruit, persistent. Fruit erect, almost sessile, elliptical-lanceolate, acuminate at each end, but most towards the apex, bluntly triangular, slightly inflated, strongly and

rather distantly ribbed, quite smooth, dim, bright green, insensibly narrowed into a very short slightly deflexed entire very small- and membranous-mouthed beak, not one-fourth as long as the rest of the fruit. Stigmas 3. Nut pale yellow, stipitate, oblong-oval, triquetrous, abruptly acuminate into a very short apiculus, loosely covered by the perigynium.

In woods and thickets. Rare, but widely distributed in England, extending from Somerset, Dorset, Isle of Wight, and Kent, north to Chester and York. Not known to occur in Scotland. Very rare and local in Ireland, but widely distributed.

England, Ireland. Perennial. Early Summer.

Rootstock with rather thick short creeping branches, at the apex of which small tufts are formed. Flowering stems 1 to 3 feet high, hollow, with a few leafless pointed sheaths at the base, and above these lamina-bearing sheaths at regular intervals passing insensibly into the bracts. Longest stem leaves 3 to 8 inches long by $\frac{3}{4}$ inch broad; top of the sheath with two small scarious lobes on the side opposite the lamina. Leaves of the barren shoots 1 foot to 18 inches long by $\frac{5}{8}$ to $\frac{3}{4}$ inch wide, resembling the leaves of *Carex Pseudo-cyperus*. Male spike $1\frac{1}{2}$ to 2 inches long. Longest female spikes 2 to 3 inches long, with a stalk about half of which is exerted in the lower spikes, but in the middle ones it is nearly wholly included in the sheath of the bract, and in the uppermost spikes is very short; the bracts of the uppermost spikes are split to the base, and have no foliaceous lamina. Fruit about $\frac{1}{8}$ inch long, resembling that of the *Tenuis* section, but strongly ribbed.

Loose-spiked Wood Sedge.

French, *Carex à épis grêles*. German, *Schlankkärige Segge*.

SPECIES XLIX.—**CAREX DEPAUPERATA.** *Good.*

PLATE MDCLXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLVI. Fig. 625.

Willot, Fl. Gall. et Germ. Exsicc. No. 685.

Rootstock subcaespitose, with shortly creeping thick branches, each of which produces several flowering stems and barren shoots from its apex. Stem erect, at length slightly drooping at the apex, slender, weak, trigonous, smooth and leafy throughout. Leaves shorter than the stem, firm, linear, those of the barren shoots and at the base of the flowering stem longer but very little broader than those on the stem, flat, rough on the ribs above and on the margins, green, not glaucous. Male spike 1, more or less conspicuously stalked, linear-cylindrical, narrowed at the base, with long oblong-lanceolate obliquely truncate

acuminate and mucronate or apiculate glumes. Female spikes 2 to 4, remote, or the lowest one distant, the lowest on long greatly exerted capillary stalks, and the upper spikes on short slightly exerted stalks, erect, ovoid, lax, 2- to 7- (generally 3-) flowered. Bracts sheathing, foliaceous, with the lamina greatly exceeding its own spike, and usually extending beyond the apex of the male spike. Glumes of the female flowers oval-oblong, acute, pale reddish-brown, with a green stripe on the back and white scarious margins, ultimately nearly wholly white, shorter and narrower than the fruit. Fruit erect, conspicuously stipitate, broadly obovate, narrowed towards the base, very bluntly trigonous, not inflated,* strongly and closely ribbed, slightly shining, olive-green, abruptly narrowed into a very long straight trigonous-cylindrical rough-edged bilobed- and membranous-mouthed beak, nearly as long as the rest of the fruit, and slightly twisted on its own axis. Stigmas 3. Nut pale yellow, scarcely stipitate, oval-obovate, trigonous, very abruptly acuminate into a short apiculus, and closely covered by the perigynium.

In woods and thickets. Very rare. Originally found in the wood behind Charlton Church, Kent, by Dr. Goodenough, but I am not aware that it has been seen there lately; in several woods about Godalming, where I gathered it in 1852 in company with the late Mr. J. D. Salmon: the stations given in the "Flora of Surrey" are "Godalming Wood, and Frith Hill, sparingly. Plentiful in a copse at Westbrook, and in a copse against Hartmoor Cottages." Axbridge, Somerset, whence I have specimens from Mr. T. B. Flower and the Rev. A. M. Norman. It has also been reported from Devon.

England. Perennial. Early Summer.

Plant growing in large tufts. Branches of the rhizome short, thick, clothed with stout fibres formed of the decayed remains of the leaf-sheaths, with a tendency to become shortly chordorrhizal. Flowering stem 1 to 3 feet high, surrounded at the base with long leaves, which are withered at the apex by the time of flowering, and have brownish-purple sheaths all bearing a lamina. Barren shoots with the lowest sheaths pointed and without a lamina. Leaves $\frac{1}{8}$ to $\frac{1}{6}$ inch broad, with strong prominent asperous ribs on the upper side, and still stronger smooth ones beneath, the summit of their sheaths with a rounded sinus, and no prominent lobes on the side opposite the stem.

* I use the term "inflated" only when there is a vacant space between the perigynium and the nut.

Male spike $\frac{3}{4}$ to $1\frac{1}{4}$ inch long. Female spikes $\frac{1}{2}$ to $\frac{3}{4}$ inch long, rarely with more than 4 fruits, and generally with only 3. Fruit (including its stalk and beak) $\frac{3}{8}$ inch long, the swollen part nearly the size of a hempseed, finely punctate between the very numerous ribs; beak with a membranous mouth split into 2 short blunt lobes. Nut $\frac{1}{10}$ inch long, the largest of any of the British species.

A very distinct species, quite unlike the rest of the British *Carexes*, but on the Continent it has allies in the following species: *C. Olbiensis*, *Jord.*, *C. Michellii*, *Hort.*, *C. brevicollis*, *D.C.*, *C. pilosa*, *Scop.*, and *C. Linkii*, *Schkuhr.* Of these, *C. pilosa*, with its broad leaves on the barren shoots, rather long and very lax spikes, fruit attenuated at both ends and furnished with a very short deflexed beak, connects *C. depauperata* with *C. strigosa*; and *C. Michellii*, with a nearly ribless fruit furnished with a long beak which has two large firm and not membranous teeth, shows an approximation to *C. sylvatica*. Strangely enough, Mr. Bentham places *C. depauperata* as a variety of his *C. distans*, under which he also includes *C. fulva*, *Good.*, *C. distans*, *Linn.*, *C. binervis*, *Sm.*, and *C. lavigata*, *Sm.*, with none of which *C. depauperata* agrees either in habit or in minute character; while he keeps *C. sylvatica*, *Huds.* (which has at least a superficial resemblance to *C. lavigata*) not only as a species, but with 5 species between it and his *C. distans*.

Starved Wood Sedge.

French, *Carex appawvri*.

SPECIES L.—**CAREX SYLVATICA.** *Huds.*

PLATE MDCLXV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCXLII. Fig. 603.

Billot, Fl. Gall. et Germ. Exsicc. No. 874.

C. Drymeia, Ehrh. Kunth, Enum. Plant. Vol. II. p. 470. Reich. Fl. Germ. Excurs. p. 67.

C. patula, Scop. D.C. Fl. Fr. Vol. III. p. 128.

C. capillaris, Leers, Herb. No. 725 (non Linn.).

Rootstock caespitose, with very short thick branches, each of which produces several flowering stems and barren shoots at the apex. Stem erect, at length arching, slender, weak, triangular, smooth and leafy throughout, or very slightly rough at the apex. Leaves shorter than the stem, firm, broadly linear, those of the barren shoots and at the base of the flowering stem longer but very little broader than those on the stem, flat, slightly rough on the margins towards the apex, green, not glaucous. Male spike 1, sometimes with a few female flowers at the base, shortly stalked, linear-cylindrical, narrowed at the base, with oblong obtuse or obliquely truncate mucronate or apiculate glumes. Female spikes 3 to 5, sometimes with a few male flowers at the apex,

remote, the lowest on long very greatly exserted capillary stalks, and the upper spikes on short but exserted stalks, at length drooping or arching-pendulous, cylindrical, rather lax, many-flowered. Bracts sheathing, foliaceous, their lamina shorter than its own spike, and not nearly reaching the apex of the male spike. Glumes of the female flowers lanceolate, acuminate and acute, very pale reddish brown, with a very broad green stripe on the back, and reddish-white scarious margins, ultimately nearly wholly white, a little shorter and a little narrower than the fruit. Fruit erect, scarcely stipitate, elliptical, acuminate at both ends, triquetro-trigonus, scarcely inflated, with a few obsolete ribs and 2 strong marginal ones, slightly shining, olive-green, gradually narrowed into a very long nearly straight trigonous-cylindrical smooth or scarcely rough-edged 2-toothed herbaceous-mouthed beak as long as the rest of the fruit. Stigmas 3. Nut pale olive, not stipitate, elliptical, triquetrous, rather gradually acuminate into a short apiculus, and closely covered by the perigynium.

In woods. Common, and generally distributed in England and the south of Scotland; rare in the north, reaching to Lanark and Moray. Frequent throughout Ireland.

England, Scotland, Ireland. Perennial. Summer.

Stems 8 inches to 2 feet high, solid. Leaves $\frac{1}{4}$ to $\frac{5}{8}$ inch broad; sheaths of those on the stem with a rounded or acute-angled sinus opposite the lamina, sometimes with a very slight indication of a tendency to be produced into 2 lobes. Male spike $\frac{3}{4}$ to 1 inch long. Female spikes 1 to 2 inches long. Fruit $\frac{1}{3}$ inch long.

C. sylvatica has sometimes the male spike with female flowers at the base, and the female spikes with male flowers at the apex, as is constantly the case in *C. Linkii*, *Schkuhr.*, a species which on that account has been referred to the section *Homostachyæ*, with utter disregard to its natural affinities.

C. sylvatica may be known from *C. levigata*, one of the *Fulvæ*, by the beak of the fruit not being flattened and rough at the margin as in the latter.

It has often been mistaken for *C. strigosa*, but the leaves on the barren shoots are much narrower, the sheaths of the stem leaves are destitute of prominent lobes opposite the lamina, and the fruit without ribs and with a long beak is quite different from that of *C. strigosa*.

Pendulous Wood Sedge.

French, *Carex des bois*. German, *Wald-Segge*.

GROUP X.—FULVÆ.

Rootstock caespitose or subcaespitose or shortly creeping, with or without elongate stolons. Spikes remote or distant, more rarely approximate. Male spike 1, conspicuously stalked, or rarely subsessile or sessile, rarely with a few female flowers, rather thick, rarely with a second small male spike at the base. Female spikes 2 to 4, dense, on exserted or included stalks, the upper ones on shorter stalks or subsessile, ascending or spreading, erect or drooping. Glumes of the female flowers reddish-brown or chestnut-brown, with a broad green or olive stripe down the middle. Bracts all foliaceous, long, sometimes falling short of and sometimes exceeding the apex of the male spike; the lowest one or all with closed sheaths which are often long. Fruit brown or olive, or green changing to yellow or yellowish-olive, ovate and plano-convex- or turbinate- or ovoid-trigonal, considerably inflated, glabrous, shining or dull, often punctate, more or less distinctly ribbed, with a long rough-edged plano-convex or rarely subulate beak ending in 2 short or subulate teeth. Stigmas 3. Nut trigonal or triquetrous, loosely covered by the perigynium.

Stem leafy throughout or only at the base. Leaves rather narrow, rarely broad.

SPECIES LI.—**CAREX LÆVIGATA.** *Sm.*

PLATE MDCLXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLIV. Fig. 623.

Billot, Fl. Gall. et Germ. Exsicc. No. 1574.

Rootstock subcaespitose, with short thick creeping branches, each of which produces several flowering stems, and several barren shoots at the apex. Stem erect, rather slender, rather stiff, triangular, smooth and leafy throughout. Leaves shorter than the stem, rather flaccid, broadly linear, those on the barren shoots longer and broader than those on the stem, flat, very slightly rough on the margins at the apex only, pale green, not glaucous. Male spike 1, longly stalked, fusiform-cylindrical, trigonal, with oblong-lanceolate subacute or mucronate fawn-coloured glumes with a narrow green midrib. Female spikes 2, more rarely 3, distant, the lowest on a long moderately exserted stalk, the upper on a short slightly exserted stalk, at length inclined or pendulous, cylindrical or oblong-cylindrical, rather dense, many-flowered. Bracts sheathing, foliaceous, the lamina of the lowest one as long as or longer than its own spike, but not reaching the apex of the male spike. Glumes of the female flowers ovate, acuminate, and

acute, orange-brown, with a broad greyish-green stripe on the back, and very narrow pale scarious margins, shorter and narrower than the fruit. Fruit ascending, not stipitate, ovate, gradually narrowed at the base, acuminate towards the apex, plano-convex-trigonus, considerably inflated, with numerous well-marked ribs and 2 strong concolorous marginal ones, slightly shining, greenish-olive, rather gradually narrowed into a long straight plano-convex rough-edged very deeply 2-toothed beak, as long as the rest of the fruit. Stigmas 3. Nut stipitate, pale yellowish-green, obovate, triquetrous, obtuse and with a short apiculus at the apex, loosely covered by the perigynium.

In damp woods and bushy places, rarely on heaths. Rather scarce, but generally distributed, reaching north to Mull, Kincardine, and Aberdeen. Rather rare, but widely distributed in Ireland.

England, Scotland, Ireland. Perennial. Summer.

Plant growing in rather large tufts, and bearing some resemblance to *C. sylvatica*. Stems 1 to 2 feet high, quite smooth except on the stalk of the male spike. Leaves $\frac{1}{4}$ inch broad, those on the barren shoots sometimes $\frac{1}{2}$ inch. Flowering stems surrounded by the long half-withered leaves of the barren shoot of the previous year. Sheaths of the flowering stem produced, on the side opposite the lamina, into an oblong obtuse scarious lobe twice as long as broad. Male spike 1 to 2 inches long; lowest female spike 1 to 2 inches long, with the exerted portion of the stalk usually much shorter than its spike. Fruit $\frac{1}{6}$ inch long, finely and indistinctly punctate between the ribs; beak with 2 long subulate very slightly diverging teeth.

Smooth-stalked Sedge.

French, *Carex lissé*. German, *Geglättete Segge*.

SPECIES LII.—**CAREX BINERVIS.** *Sm.*

PLATE MDCLXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLV. Fig. 624.

Willd., Fl. Gall. et Germ. Exsicc. No. 3482.

Rootstock subcæspitose, with rather short thick creeping branches, each of which produces 1 or more flowering stems, and several barren shoots at the apex. Stem erect, rather stout, stiff, triangular, smooth and leafy throughout. Leaves shorter than the stem, firm, broadly linear, those on the barren shoots longer but not broader than those on the stem, flat, rough on the margins towards the apex, dark green, not glaucous. Male spike rather shortly stalked, fusiform- or sub-clavate-cylindrical, with oblong-lanceolate obtuse chocolate-coloured glumes with green midribs and narrow pale scarious margins. Female

spikes 2 to 4, remote, or the lowest one distant, the lowest one above the middle of the stem, on a long more or less exserted stalk, the upper ones on very short slightly or scarcely exserted stalks, at length inclined or pendulous, rarely suberect, cylindrical or oblong, very dense, many-flowered. Bracts sheathing, foliaceous, the lamina of the lowest one longer than its own spike, but not reaching nearly to the apex of the male spike. Glumes of the female flowers oval-ovate, cuspidate, or the lower ones subaristate, chocolate-brown, with a narrow green stripe on the back, and rather narrow pale scarious margins, rather shorter and narrower than the fruit. Fruit erect-ascending, not stipitate, rhomboidal-ovate, narrowed both towards the base and apex, plano-convex-trigonus, considerably inflated, with several faint ribs and 2 strong bright green marginal ones, slightly shining, green variegated with chocolate-brown or wholly brown, rather abruptly narrowed into a rather long straight plano-convex rough-edged rather deeply 2-toothed beak, about half as long as the rest of the fruit. Stigmas 3. Nut stipitate, pale yellowish green, oblong-obovate, triquetrous, subtruncate, and with a short apiculus at the apex, loosely covered by the perigynium.

On heaths in low ground and in grassy places on mountains. Rather common, and generally distributed.

England, Scotland, Ireland. Perennial. Spring, early Summer.

Rootstock rather more longly creeping than in *C. lævigata*. Stems 10 to 30 inches high. Leaves about $\frac{1}{4}$ inch broad; sheaths of stem leaves with a short scarious lobe opposite the lamina, not so long as broad. Male spike $\frac{3}{4}$ to $1\frac{1}{2}$ inch long. Female spikes $\frac{1}{2}$ to $1\frac{3}{4}$ inch long. Fruit $\frac{1}{5}$ inch long.

C. binervis bears considerable resemblance to *C. lævigata*, but the leaves are much longer, narrower, and stiffer; the male spike has the glumes darker and more obtuse; the female spikes have the glumes darker, less gradually acuminate, and consequently more evidently cuspidate than in *C. lævigata*. Fruit darker coloured and more or less tinged with chocolate-brown, which makes the strong green marginal ribs very conspicuous; the dots on it between the ribs are also chocolate-brown, which is rarely the case in *C. lævigata*. The fruit differs in shape by having the broadest part near the middle, and the beak shorter in proportion to the rest of the fruit; the teeth of the beak are much shorter.

In upland districts the fertile spikes are sometimes quite short with nearly included peduncles, and the fruit is wholly dark chocolate, with only the ribs green.

Green-ribbed Sedge.

French, *Carex à deux nervures*. German, *Zweinerrige Segge*.

SPECIES LIII.—**CAREX DISTANS.** *Linn.*

PLATE MDCLXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLIII.*Billot, Fl. Gall. et Germ. Exsicc.* No. 1777.

Rootstock caespitose, with very short branches, each of which produces several flowering stems and barren shoots at the apex. Stem erect, rather slender, rather stiff, triangular, smooth throughout, leafy only near the base. Leaves shorter than the stem, rather firm, linear, flat, rough on the margins towards the apex or throughout, pale green, scarcely glaucous. Male spike 1, longly (more rarely shortly) stalked, linear-cylindrical, scarcely clavate, with oblong-obtuse reddish-brown glumes with narrow pale scarious margins. Female spikes 2 to 4, remote or distant, the lowest one below or near the middle of the stem on a long included or slightly exerted stalk, the upper ones on short included or scarcely exerted stalks, erect, oblong or oblong-cylindrical or ovoid, very dense, many-flowered. Bracts sheathing, foliaceous, the lamina of the lowest one much longer than its own spike, but rarely reaching to and very rarely exceeding the apex of the male spike. Glumes of the female flowers roundish-ovate, obtuse and apiculate, or shortly mucronate, pale reddish-brown with a broad green stripe on the back and very narrow pale scarious margins, much shorter than but nearly as broad as the fruit. Fruit erect, not stipitate, oval-ovate, very slightly narrowed towards the base and apex, plano-convex-trigonous, considerably inflated, with several rather strong ribs, the 2 marginal ones not much stronger than the others, slightly shining, green, ultimately olive or olive-brown, concolorous, pellucidly punctate, abruptly narrowed into a rather long straight plano-convex rough-edged rather shortly 2-toothed beak, not half as long as the rest of the fruit; teeth of beak diverging, rough within. Stigmas 3. Nut stipitate, pale yellow, oval-obovate, triquetrous, obtuse, with a short apiculus at the apex, loosely covered by the perigynium.

In salt marshes and damp pastures by the sea and tidal rivers. Common, and generally distributed all round the coast.

England, Scotland, Ireland. Perennial. Summer.

Stems 6 to 30 inches high. Leaves $\frac{1}{6}$ to $\frac{1}{5}$ inch broad. Male spike $\frac{1}{4}$ to $1\frac{1}{4}$ inch long. Female spikes $\frac{1}{4}$ to 1 inch long. Fruit $\frac{1}{6}$ inch long.

C. distans is often confounded with *C. binervis*, but it grows in denser tufts, usually with more numerous stems in each tuft; the

leaves are shorter, much narrower, paler green; the sheaths of the stem leaves with the free scarious lobe longer than broad. The lowest female spike is placed much nearer the base of the stem, the spikes are shorter, the glumes broader, shorter, blunter, and with a shorter mucro, and brown, not chocolate; the fruit is pale in colour, and has the dots on it concolorous, and the ribs much more equal; in shape it is less expanded in the middle, and the beak is shorter and less deeply toothed. The nut is less truncate at the apex.

In *C. distans* the ribs are sometimes very faint, in which case it has frequently been mistaken for *C. punctata*.

Distant-spiked Sedge.

French, *Carex espacé*. German, *Entfernt ährige Segge*.

SPECIES LIV.—**CAREX PUNCTATA.** *Gauml.*

PLATE MDCLXXI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLI. Fig. 619.

Billot, Fl. Gall. et Germ. Exsicc. No. 3258.

Rootstock caespitose with very shortly creeping branches, each of which produces several flowering shoots and barren stems at the apex. Stem erect, slender, rather stiff, triangular, smooth throughout, leafy only near the base. Leaves shorter than the stem, firm, linear, flat, slightly rough on the margins at the apex, pale green, but scarcely glaucous. Male spike 1, longly (more rarely shortly) stalked, linear-cylindrical, scarcely clavate, with oblong very obtuse reddish-brown glumes with narrow pale scarious margins. Female spikes 2 to 4, remote or distant, the lowest one above the middle of the stem, on a long included or slightly exerted stalk, the upper ones on short slightly exerted stalks, erect, oblong or oblong-cylindrical or ovoid-oblong, dense, many-flowered. Bracts sheathing, foliaceous, lamina of the lowest one much longer than its own spike, and frequently reaching or even exceeding the apex of the male spike. Glumes of the female flowers broadly ovate, strongly mucronate, pale reddish-brown, with a broad green stripe on the back and very narrow scarious margins, shorter than but nearly as broad as the fruit. Fruit spreading, not stipitate, oval, very slightly narrowed towards the base and apex, ovoid-trigonus, greatly inflated, with no ribs but the two rather faint marginal ones, slightly shining, green, ultimately olive, concolorous, pellucidly punctate, abruptly narrowed into a rather short straight plano-convex smooth-edged shortly 2-toothed beak, not half as long as the rest of the fruit; teeth of the beak erect, smooth. Stigmas 3. Nut substipitate, olive-yellow, oval-obovate, triquetrous,

subobtus, with a short apiculus at the apex, very loosely covered by the perigynium.

In damp places by the sea. Very rare, if indeed it has really been found in Britain. Vazon Bay, Guernsey (Professor Babington). Reported by Mr. T. Westcombe from Cornwall, by the side of the footpath on the face of the cliff on the coast south of St. Austel and about three-quarters of a mile westward of Charlestown, from which station there is a specimen in Dr. Boott's Herbarium, as I am informed by the Rev. W. W. Newbould. Said also to have occurred on the Menai Straits, near Beaumaris or Bangor, or both, but as these stations have disappeared from recent editions of the "Manual" and "British Flora," it is to be presumed that some mistake has occurred. Another English station is given by Professor D. Oliver, on the coast about four miles south of Whitehaven, Cumberland, but as this is not given in the "Manual," I presume it likewise is an error. Several Irish stations are reported in the "Cybele Hibernica." "Near Dingle, Kerry, near a tower at the mouth of the harbour: *Professor D. Oliver*, 1853. At Sneem, Kerry; and at Berehaven, Cork: the *late Mr. J. Woods*. Shore at Glengarriff, sparingly; in greater quantity, but dwarfed, near Dunboy, Berehaven, Cork: *Mr. Isaac Carroll*."—*Cyb. Hib.* pp. 333 and 334.

England (?), Ireland (?). Perennial. Early Summer.

Habit of growth and foliage very similar to that of *C. distans*. Male spike $\frac{3}{8}$ to $1\frac{1}{4}$ inch long. Female spikes $\frac{1}{4}$ to 1 inch long. Fruit $\frac{1}{7}$ inch long.

C. punctata differs from *C. distans* in its more lax spikes, with the fruit much more spreading. Fruit greatly inflated, convex above and below, with the ribs obsolete except the 2 marginal ones, and it is ultimately paler and grayer in colour, the beak much smoother, with shorter and erect smooth not diverging rough-edged teeth, than in *C. distans*; the scarious lobe at the top of the stem leaves is shorter and more truncate, the bracts are longer, and the glumes have commonly a larger and much rougher mucro.

Of this I have seen no British specimens, and as British writers take no notice of the most striking character which belongs to it, viz. the spreading fruit, I fear it is imperfectly known. Our figure is drawn from a French specimen. At Vazon Bay, in the "*Primitiæ Floræ Sarnicæ*," *C. punctata* is stated to occur, but no mention is made of *C. distans* being found there: but in 1853 I made a very careful search for *C. punctata* without success; but *C. distans* was in great plenty, often with the fruit very faintly ribbed, but never with it spreading.

Dotted-fruited Sedge.

French, *Carex punctuée*.

SPECIES LV.—**CAREX FULVA.** *Good.*

PLATES MDCLXIX. MDCLXX.

Billot, Fl. Gall. et Germ. Exsicc. No. 1087.*C. Hornsuchia*, "*Hoppe*," *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 884. *Green.*& *Godr.* Fl. de Fr. Vol. III. p. 425. *Hortm.* Handbk. i Scand. Fl. ed. ix. p. 227.

Rootstock subæspitose, or more frequently creeping, with rather long creeping branches, each of which produces 1 flowering stem and several barren shoots, and usually rather elongate stolons. Stem erect, slender, stiff, triangular, smooth throughout or slightly rough at the apex (rarely rough throughout), leafy only near the base. Leaves much shorter than the stem, firm, linear, flat, rough on the margins towards the apex, pale green, scarcely glaucous. Male spike 1 (rarely with a small one at the base), longly (more rarely shortly) stalked, linear-fusiform, subacute, with oblong-lanceolate obtuse orange-brown glumes with broad pale scarious margins. Female spikes 1 to 3, remote, the lowest one much above the middle of the stem, on a long included or more or less exserted stalk, the upper ones on short included stalks, erect, oval-oblong or ovate-ovoid, dense, many-flowered. Bracts sheathing, foliaceous, the lamina of the lowest one longer than its own spike, but not reaching the apex of the male spike. Glumes of the female flowers ovate, acuminate, acute but not mucronate, chestnut-brown, usually with a green midrib and broad silvery-white scarious margins (rarely wholly orange-brown with a green midrib), shorter and a little narrower than the fruit. Fruit spreading or spreading-ascending, not stipitate, oval-elliptical, narrowed towards the base and apex, ovoid-trigonus, considerably inflated, with several rather strong ribs, and 2 stronger marginal ones, bright green, ultimately yellowish-olive, concolorous, rather abruptly narrowed into a rather long straight plano-convex rough-edged rather shortly 2-toothed beak, about two-thirds as long as the rest of the fruit; teeth of the beak erect, with membranous inner margins. Stigmas 3. Nut pale yellow, oval-obovate, triquetro-trigonus, truncate and with a short apiculus at the apex, loosely covered by the perigynium.

Var. *α*, *genuina*.

PLATE MDCLXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLII. Fig. 620.*Carex fulva*, *Sm.* Engl. Bot. ed. i. No. 1295; and Engl. Fl. Vol. IV. p. 107. *Reich.*

Ic. l.c. p. 23.

Stem slightly rough towards the top. Stalk of the lowest female

spike only slightly exerted. Glumes of the female flowers ovate, chestnut-brown, with a green midrib, and broad white scarious margins. Fruit rather faintly ribbed. Nut perfect.

Var. β , *speirostachya*.

PLATE MDCLXX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLII. Fig. 621.

C. speirostachya, Sm. Engl. Fl. Vol. IV. p. 98. D. Don, in Engl. Bot. Suppl. No. 2770.

C. Hornsuchiana, "Hoppe." Reich. Ic. l.c. p. 23.

C. fulva, β , Hornsuchiana, Bab. Man. Brit. Bot. ed. vi. p. 389.

Stem smooth except sometimes immediately beneath the lowest spike. Stalk of the lowest female spike exerted for nearly half its length. Glumes of the female flowers broadly ovate, chestnut-brown, with a green midrib and broad white scarious margins. Fruit rather strongly ribbed. Nut perfect.

(?) Var. γ , *sterilis*

C. fulva, Koch, Syn. Fl. Germ. et Helv. ed. ii. p. 888. Andersson, Cyper. p. 24. Hartm. Handbk. i Scand. Fl. p. 227 (non Good.?).

Stem rough, stalk of the lowest female spike nearly wholly included in the rather short sheath. Glumes of the female flowers narrowly ovate, brownish-orange, with narrow white scarious margins. Fruit much inflated, strongly ribbed, with a beak nearly as long as the rest of the fruit. Nut abortive.

Var. α in marshes, bogs, and wet pastures. Not uncommon, and generally distributed. Var. β in "peaty bogs, chiefly on mountains" (Bab.). Var. γ (?), "Yorkshire," Dr. Boott, in letter quoted in Bromfield's "Fl. Vect." p. 565.

England, Scotland, Ireland. Perennial. Summer.

In vars. α and β the rootstock is more or less decidedly creeping, the stems being solitary or few together. Stems 8 to 18 inches high. Leaves $\frac{1}{8}$ inch broad or a little more. Sheaths of the stem leaves with a free scarious lobe opposite the lamina, rather longer than broad. Male spike $\frac{1}{2}$ to 1 inch long, sometimes with a second small one at the base. Female spikes $\frac{1}{2}$ to $\frac{3}{4}$ inch long. Fruit $\frac{1}{5}$ inch long.

Var. β I am unable to separate from var. α . The exerted lowest peduncle is really the only tangible character, and that varies by insensible gradations from nearly wholly included to longly exerted, so that I feel quite unable to say where var. α ends and var. β begins, and had Smith not described it as a species, I should certainly not have noticed it even as a variety.

Var. γ is a very remarkable plant, of which I have seen no British specimens, but I suppose that it is this to which Dr. Boott refers in the letter quoted above, as in it he says that he inclines to "the idea established by French authors that the true *C. fulva*, *Good-enough*, 'Trans. Linn. Soc.,' is a sterile form of *C. speirostachya*." *C. fulva* of continental botanists, of which I have Scandinavian specimens from Mr. C. Hartmann, is more caespitose than *C. fulva*, vars. α and β , with stouter and much rougher stems, broader leaves, more shortly sheathing bracts, and more approximate female spikes, narrower, paler, and more orange glumes, more inflated fruit, with a much longer beak, and containing no properly matured nut. It may be a sterile form of *C. fulva*, as we find sterile forms in several species of *Carex*, but my own impression is that it is a hybrid between *C. fulva* and *C. flava*.

C. fulva of British authors is liable to be confounded not only with *C. distans*, but also with small specimens of *C. binervis*. From *C. binervis* it differs in being less caespitose, with shorter, narrower, and less rigid leaves, in having the male spike more acute, the female spikes shorter, more remote, and with the fruit more spreading, the glumes gradually tapering and not suddenly cuspidate, the fruit with a narrower beak, and the marginal ribs not very much stronger than the others. The lobe which terminates the sheath of the leaf on the side opposite the lamina is considerably longer and much less truncate than in *C. binervis*.

In habit it is nearer to *C. distans*, but the male spike is more pointed, the female spikes broader in the middle, with the fruit much more spreading, the glumes gradually pointed and not rather abruptly cuspidate or mucronate, the fruit rather more inflated, more regularly oval and with a larger beak, and often without pellucid punctures, the nut smoother and wider towards the apex.

From *C. punctata* it differs in its less caespitose habit, its blunter male spike, more ovoid female spikes, more tapering and darker-coloured glumes, less spreading and less inflated fruit, with much more conspicuous ribs, and a longer and rougher beak, having the teeth edged with a white membrane.

Tawny Sedge.

French, *Carex fauve*. German, *Hornschrück's Segge*.

SPECIES LVI.—**CAREX EXTENSA.** *Good.*

PLATE MDCLXXV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXIV.

Billot, Fl. Gall. et Germ. Exsicc. No. 3257.

Rootstock densely caespitose, without stolons. Stem ascending or curved, slender, flexuous, wiry but rather weak, obscurely trigonous, smooth throughout, leafy nearly to the middle. Leaves nearly equal-

ling or exceeding the stem, firm, narrowly linear, more or less channelled, ultimately often convolute, slightly rough on the margins towards the apex, pale green, more or less glaucous. Male spike 1, sessile or subsessile, cylindrical, blunt, sometimes androgynous, with ovate-oval obtuse or abruptly mucronate orange-brown glumes with green midribs and concolorous or very narrowly pale scarious margins. Female spikes 2 to 4, contigulous, or the lowest one sometimes a little remote or even distant from the others, but always far above the middle of the stem, on a short included or very slightly exserted stalk, the upper ones sessile or subsessile, ascending-erect, oblong or ovoid-oblong, very dense, many-flowered. Lowest bract shortly sheathing, with a very long foliaceous lamina far exceeding the apex of the male spike; upper bracts not sheathing, but with their lamina usually exceeding the male spike. Glumes of the female flowers roundish-ovate, mucronate or cuspidate, pale reddish-brown, with a green midrib and concolorous margins, shorter than but as broad as the fruit. Fruit ascending or spreading-ascending, not stipitate, oval-obovate, narrowed towards the base, ovoid-trigonus, greatly inflated, with several rather strong ribs and 2 stronger marginal ones, greenish-olive, more or less tinged with brown, pellucidly-punctate or with minute brown dots, rather gradually narrowed into a short straight plano-convex smooth shortly 2-toothed beak about one-fourth as long as the rest of the fruit; teeth of the beak erect, smooth. Nut brownish-olive, ovate, triangular-triquetrous, obtuse and attenuated at each end, but most towards the base, scarcely apiculate, very loosely covered by the perigynium.

Var. α , *genuina*.

PLATE MDCLXXV.

Stems tall, equalling or a little longer than the leaves.

Var. β , *minor*.

Stems short, often curved, shorter than the leaves. Spikes and fruit smaller than in var. α , the latter more insensibly attenuated into the beak, which is shorter in proportion to the rest of the fruit.

In salt marshes and pastures by the sea. Rather rare, but widely distributed, extending along the coast from Cornwall and Kent to Orkney. All the Scotch specimens I have gathered belong to var. β .

England, Scotland, Ireland. Perennial. Summer.

Plant growing in dense round tufts. Stems in var. α 18 inches to

2 feet high. Male spike $\frac{1}{2}$ to 1 inch long. Female spikes $\frac{3}{8}$ to $\frac{3}{4}$ inch long. Fruit $\frac{1}{8}$ inch long.

Var. β has the stems 3 to 8 inches long; male spike $\frac{1}{2}$ to $\frac{1}{2}$ inch long; female spikes $\frac{1}{4}$ to $\frac{1}{2}$ inch long.

A very well marked species, distinguished from all the preceding Carices of the Fulva section by its channelled leaves, approximate or contiguous spikes, and bracts with short sheaths and very long laminae.

Sometimes when there are 4 spikes, the lowest one is distant from the others, but in that case the 3 upper female spikes are contiguous to each other and to the male spike.

Long-bracteated Sedge.

French, *Carex étiré*. German, *Ausgedehnte Segge*.

SPECIES LVII.—**CAREX FLAVA.** Linn.

PLATES MDCLXXII. MDCLXXIII. MDCLXXIV.

Hook. & Arn. Brit. Fl. ed. viii. p. 511.

Rootstock densely caespitose, without stolons. Stem ascending, slender, not flexuous nor wiry, but rather firm, bluntly trigonous, smooth, or slightly rough at the apex. Leaves longer or shorter than the stem, rather firm, linear or narrowly linear, flat or very slightly channelled, rough on the margins, yellowish-green, not glaucous. Male spike 1, sometimes with a second small one at the base, sessile or more or less longly stalked, fusiform-cylindrical, blunt, sometimes androgynous, with oblong-obtuse orange-brown or chestnut-brown glumes, with green or concolorous midribs and concolorous or narrowly pale margins. Female spikes 1 to 4, contiguous or approximate or the lowest one remote, the lowest one usually above the middle of the stem, on a short included or rarely slightly exerted stalk, the upper ones sessile or subsessile, ascending or spreading-ascending or spreading, roundish or ovoid or oblong-ovoid, more rarely oblong, dense or very dense, many-flowered. Lowest bract shortly sheathing, with a very long foliaceous lamina equalling or more or less longly exceeding the apex of the male spike and ultimately spreading or spreading-reflexed; upper bracts not sheathing, and with the lamina shorter than or exceeding the male spike. Glumes of the female flowers ovate, obtuse or subobtuse, not cuspidate nor mucronate, reddish-brown with a green midrib and concolorous margins, ultimately wholly pale brown or nearly white, shorter and narrower than the fruit. Fruit squarrosely-spreading, not stipitate, rhombic-elliptical, or oblong-obovate, regularly or obliquely turbinate-ovoid or turbinate-trigonous, very greatly inflated, with several rather strong ribs, the

marginal ones very little stronger than the others, green, ultimately yellow or olive-yellow, concolorous, gradually narrowed into a long or rather long deflexed subulate rough-edged shortly 2-toothed beak, or rather abruptly narrowed into a short straight conico-cylindrical rough-edged very shortly 2-toothed beak; teeth of the beak diverging. Nut brownish-olive, obovate-triangular, narrowed at the base, very obtuse, with a small mucro at the apex, very loosely covered by the perigynium.

SUB-SPECIES I.—**Carex Oederi.** Ehrh.

PLATE MDCLXXIV.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXII. Fig. 652.

Billot, Fl. Gall. et Germ. Exsicc. No. 1352.

C. flava, var. *Oederi*, *Kunth*, Enum. Plant. Vol. II. p. 446. *Hook. & Arn.* Brit. Fl. ed. viii. p. 511.

C. flava, var. β *patula*, and γ *Oederi*. *Coss. & Germ.* Fl. Par. ed. ii. p. 572.

C. extensa, var. β , *Maclaren*, in Bot. Gaz. Vol. III. p. 25.

Leaves narrowly linear, usually equalling or exceeding the stem, stiff, faintly channelled. Male spike sessile or subsessile. Female spikes 3 or 4, contiguous or approximate, or the lower one more or less remote from the others, usually spreading or spreading-ascending, oblong-ovoid or oblong, very dense and very many-flowered. Lowest bract usually exceeding the male spike, often greatly so. Glumes subacute, orange-brown, with green midribs, ultimately nearly white. Fruit rhombic-elliptical, nearly regularly turbinate-trigonal, dim, bright green, ultimately bright greenish-yellow, rather abruptly narrowed into a short straight conico-cylindrical slightly notched beak, scarcely half the length of the rest of the fruit.

On the margins of lakes and ponds, and in marshes. Apparently rather rare, but widely distributed. I have gathered it on the banks of St. Ouen's Pond, Guernsey; at Gullane Ponds, Haddington; Loch Gelly, Fife; and pools on the Fidge at Swanbister, Orkney; and I have specimens from Surrey, Cambridge, Cheshire, Merioneth, York, and Lancashire. Professor Babington and the "*Cybele Hibernica*" give it as a native of Ireland.

England, Scotland, Ireland. Perennial. Spring to Autumn.

Plant growing in very dense tufts producing numerous flowering stems in succession during the whole summer. Stems 2 inches to 1 foot high. Leaves about $\frac{1}{8}$ inch broad; sheaths of stem leaves with the free scarious lobe at the apex broader than long and truncate. Male spike $\frac{1}{4}$ to $\frac{3}{4}$ inch long, often androgynous. Female spikes $\frac{1}{4}$ to $\frac{1}{2}$ inch long. Fruit $\frac{1}{12}$ inch long.

C. Oederi has much the habit of *C. extensa*, but the leaves are much less deeply channelled, broader, and less rigid, the stems less wiry and not at all flexuous, the glumes paler and with the midrib not excurrent into a mucro or cusp; the fruit much smaller, more bluntly trigonous, and with the 3 faces nearly equal, the ribs more equal, the beak smooth, and with much shorter and more spreading teeth; the nut much smaller, narrowed at the base, very obtuse at the apex, and with a very conspicuous apiculus.

C. patula, *Host.*, appears to belong to *C. Oederi*, but I have seen no authentic specimens.

Oeder's Sedge.

French, *Carex d'Oeder.* German, *Oeder's Segge.*

SUB-SPECIES II.—*Carex eu-flava.*

PLATES MDCLXXII. MDCLXXIII.

C. flava, *Ehrh. et Auct. Plur.*

C. flava, var. α , *Kunth*, Enum. Plant. Vol. II. p. 446. *Hook. & Arn.* Brit. Fl. ed. viii. p. 511. *Coss. & Germ.* Fl. Par. ed. ii. p. 7511.

Leaves linear, usually shorter than the stem or equalling or exceeding it, rather soft, flat. Male spike stalked or subsessile. Female spikes 1 to 3, rather remote or contiguous, erect or ascending, ovoid or roundish, dense, many-flowered. Lowest bract rarely exceeding the male spike, and generally much shorter. Glumes subobtuse, reddish-brown, with a green midrib, ultimately brownish-yellow. Fruit half-obovate-oval, obliquely trigonous-ovoid, much more convex above than below, slightly shining, dull green, ultimately brownish yellow, gradually narrowed into a long or rather long deflexed conical subulate deeply notched beak, usually nearly as long as the rest of the fruit.

Var. α , *genuina.*

PLATE MDCLXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2158.

C. flava, *Sm.* Engl. Bot. ed. i. No. 1294. *Reich. Ic.* l.c. p. 30.

Leaves shorter than the stem. Male spike usually stalked. Female spikes 1 to 3 (usually 2), not contiguous, the lowest one with the stalk slightly exerted. Lowest bract commonly shorter than the male spike. Fruit considerably narrowed towards the base; beak as long as the rest of the fruit, greatly deflexed.

Var. β , *lepidocarpa*.

PLATE MDCLXXIII.

*Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXII. Fig. 653.**Billot, Fl. Gall. et Germ. Exsicc. No. 2159.**C. lepidocarpa, Tausch. Reich. Ic. l.c. p. 29.**C. Oederi, Sm. Engl. Bot. ed. i. No. 1773, ex part. excl. descript. (non Ehrh.).*

Leaves commonly as long as or even longer than the stem. Male spike usually subsessile or sessile. Female spikes 2 to 4 (usually 3), all approximate, or the lowest a little remote, with the stalk wholly included in the sheath. Lowest bract commonly exceeding the male spike. Fruit smaller than that of var. α , less narrowed towards the base; beak a little shorter than the rest of the fruit, less deflexed than in var. α . Whole plant smaller, and the stems usually much shorter than in var. α .

In marshes, wet places, meadows, and heaths. Common and generally distributed. Var. β the commoner of the two, as far as my own experience goes.

England, Scotland, Ireland. Perennial. Early Summer.

Var. α has the stems 8 inches to 2 feet high. Leaves about $\frac{1}{2}$ inch broad; sheaths of the stem leaves with a free scarious lobe at the top broader than long, and truncate. Male spike $\frac{1}{2}$ inch to 1 inch long. Female spikes $\frac{1}{4}$ to $\frac{5}{8}$ inch long. Fruit $\frac{1}{6}$ inch long, nearly flat on the under side, curved nearly into a semicircle on the other, with the long beak greatly bent down, which gives a very squarrose aspect to the spikes.

Var. β has the stems 2 to 8 inches high, the leaves rarely more than $\frac{1}{8}$ inch broad. Male spike $\frac{1}{4}$ to $\frac{1}{2}$ inch long. Female spikes $\frac{1}{4}$ to $\frac{3}{8}$ inch long. Fruit $\frac{1}{8}$ inch long, less narrowed towards the base, and with the beak shorter and less deflexed, but all the differences between var. α and var. β shade so imperceptibly into one another, that it is merely an arbitrary line which can be drawn between them.

C. eu-flava var. α cannot well be mistaken for any other British *Carex*, but var. β is very often confounded with *C. Oederi* (as the Rev. W. W. Newbould informs me was done in the original drawings for "E. B." ed. i. No. 1773), and indeed it is often difficult to separate the two, especially in the young state. It has, however, the stems thicker, the leaves broader and flatter, the female spikes less spreading, more ovoid or even roundish, the glumes darker and more obtuse, the fruit larger, more convex on the upper side, the beak longer, more tapering, and always more or less bent downwards. The colour of the fruit is at first duller green than in *C. Oederi*, and afterwards a much more dingy yellow; but these differences vary so much that I have frequently seen dried specimens which I hesitated

whether to name *C. Oederi* or *C. eu-flava* var. *lepidocarpa*; but I never found the same difficulty when the plants were growing.

Yellow Sedge.

French, *Carex jaune*. German, *Gelbe Segge*.

GROUP Y.—HIRTÆ.

Rootstock creeping, generally with elongate stolons, rarely subcæspitose. Spikes remote or distant. Male spikes 2 to 3, rarely only 1, the uppermost stalked. Female spikes 1 to 4, commonly 2, erect, dense, on short included or nearly included stalks, the upper ones subsessile. Glumes of the female flowers brown, with a green keel, sometimes with very broad scarious margins. Bracts all foliaceous, long, with short or long closed sheaths. Fruit erect, brown, ovoid, subtrigonus, more or less greatly inflated, ribbed, pubescent, or rarely glabrous and ciliated * with a long or short beak, ending in 2 very long or rather long spine-like teeth. Stigmas 3. Nut triquetrous, rather loosely covered by the perigynium.

Stem leafy only in the lower half, or rarely throughout. Leaves rather broad or very narrow.

SPECIES LVIII.—**CAREX FILIFORMIS.** *Linn.*

PLATE MDCLXXVI.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXV. Fig. 643.

Billot, Fl. Gall. et Germ. Exsicc. No. 686.

Rootstock creeping, with somewhat chordorrhizal branches and elongate stolons. Stem erect, rather slender, wiry, rigid, bluntly trigonus, smooth. Leaves about as long as the stem, very stiff, narrowly-linear, deeply channelled, involute not keeled, glabrous, rough on the margins, pale green, slightly glaucous; sheaths on the base of the stem at length split, and with filamentous margins. Male spikes 2, more rarely 1, the upper one stalked, rarely subsessile, the second one sessile, cylindrical, slender, acute, with lanceolate acuminate and acute brown glumes with pale midribs. Female spikes 1 to 3, rather remote, the lowest one far above the middle of the stem, on a very short included stalk, the upper ones sessile or subsessile, erect, fusiform-cylindrical, or the upper ones ovoid, dense, many-flowered. Lowest bract very shortly sheathing, with a long foliaceous lamina

* *C. hordeiformis*, *Wahl.*, and *C. orthostachys*, *C. A. Mey.*, belong to this section.

usually reaching to or exceeding the apex of the male spike ; upper bracts not sheathing, and with the lamina shorter than the male spike. Glumes of the female flowers lanceolate, acute, usually cuspidate or shortly aristate, ciliated on the margins and midrib, chocolate-brown, with green or pale midribs and slightly paler margins, shorter and narrower than the fruit. Fruit ascending-erect, substipitate, ovate-elliptical, bluntly-trigonus, slightly inflated, with several strong equal ribs, densely hispid-pubescent, pale olive-brown, rather gradually narrowed into a very short thick hispid straight 2-toothed beak, scarcely one-fourth the length of the rest of the fruit; teeth rather long, subulate, greatly-diverging, as long as the rest of the beak. Stigmas 3. Nut pale yellow, oval, triquetro-trigonus, obtuse, rather closely covered by the perigynium.

In ditches in peat bogs, especially by the sides of ponds and lakes. Rare, but widely distributed, extending from Somerset (or perhaps Devon) and Hants to Sutherland. Rare, but widely distributed in Ireland.

England, Scotland, Ireland. Perennial. Summer.

Rootstock with rather thick creeping branches, producing several flowering stems and barren shoots, one before the other, or in a small tuft at the apex. Stems 18 to 30 inches high. Leaves very slender, with the edges strongly involute, and without a keel on the back, which is very seldom the case in the genus *Carex*. Terminal male spike $1\frac{1}{4}$ to 2 inches long; the second male spike much shorter, and sometimes absent; lowest female spike $\frac{3}{4}$ to $1\frac{1}{2}$ inch long, sometimes with a few male flowers at the apex. Fruit $\frac{1}{2}$ inch long, with strong ribs, which, however, are nearly concealed by the dense coating of stiff grey pubescence.

A very distinct species which cannot well be confounded with any other of the British Carices.

Slender-leaved Sedge.

French, *Carex filiforme*. German, *Fadenförmige Segge*.

SPECIES LIX.—**CAREX HIRTA.** *Linn.*

PLATE MDCLXXVII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLVII. Fig. 628.

Billot, Fl. Gall. et Germ. Exsicc. No. 2574.

Rootstock extensively creeping, with chordorrhizal branches and elongate stolons. Stem erect, rather stout, not wiry, weak, triquetrous, smooth (except between the spikes), leafy throughout. Leaves shorter than the stem, or rarely equalling it, flaccid, broadly linear, flat, usually pubescent, rough on the margins, bright green

not glaucous; sheaths on the base of the stem at length splitting, and with filamentous margins. Male spikes 2 or 4, the uppermost one subsessile or rarely stalked, the others sessile, fusiform-cylindrical, thick, blunt, with oblong shortly cuspidate reddish-brown glumes with green midribs and broad white scarious margins. Female spikes 1 to 3, remote, the lowest one near or sometimes even below the middle of the stem on a rather long shortly-exserted stalk, the upper ones on shorter stalks, the uppermost subsessile, erect, cylindrical, rather dense, many-flowered. Lowest bract longly sheathing, with a long foliaceous lamina falling short of the male spike, upper bracts more shortly sheathing, the uppermost not at all, but the lamina reaching nearly up to the male spike, all rarely with scarcely any lamina. Glumes of the female flowers ovate, acuminate, cuspidate or more usually aristate, shortly ciliate on the margins, and also on the keel of the awn, reddish-brown, with a broad green stripe on the back, and very broad white scarious margins, sometimes nearly wholly white and scarious, shorter (excluding the awn, as being liable to vary in length) and narrower than the fruit. Fruit erect, scarcely stipitate, ovate, acuminate, compressed-ovoid, scarcely trigonous, considerably inflated, with several strong ribs and 2 stronger marginal ones, densely woolly-pubescent, olive green, ultimately reddish-brown, insensibly narrowed into a long thick hispid straight 2-toothed beak, nearly as long as the rest of the fruit; teeth very long, subulate, suberect, nearly as long as the rest of the beak. Stigmas 3. Nut pale olive-yellow, ovoid, triquetrous, obtuse, rather loosely covered by the perigynium.

Var. *α*, *genuina*.

Sheaths and leaves clothed with soft hair. Bracts with a long foliaceous lamina. Glumes pubescent, cuspidate or aristate.

Var. *β*, *hirtiformis*.

C. hirtiformis, *Pers. Syn. Pl. Vol. II. 547.*

Sheaths and leaves glabrous, or nearly so. Bracts with a long foliaceous lamina. Glumes glabrous, cuspidate or aristate.

Var. *γ*, *ebracteata*.

Sheaths and leaves glabrous. Bracts with a subulate point, but no foliaceous lamina, even the lowest bract scarcely sheathing. Glumes glabrous, obtuse, apiculate.

In marshes and meadows. Var. α very common and generally distributed. Var. β , occasionally with var. α . Var. γ , near the "Haunch of Venison" Inn, between Epsom and Ashstead, Surrey. Mr. H. C. Watson.

England. Scotland. Ireland. Perennial. Summer.

Rootstock very extensively creeping, chondorrhizal, producing single stems and small tufts of stems at intervals. Stems 6 inches to 2 feet high. Terminal male spike $\frac{1}{2}$ inch to 1 inch long; lowest female spike 1 to 2 inches long, sometimes compound at the base. Fruit $\frac{1}{3}$ inch long.

Var. β differs from the type only in being more glabrous, but it is impossible to draw a line between var. α and var. β .

Var. γ , of which the only specimens I have seen were collected by Mr. H. C. Watson, is a very remarkable aberration. Besides being glabrous it has the spikes approximate, the bracts not sheathing, and with a very short scarcely foliaceous point; the glumes obtuse and apiculate: the whole habit of the plant is more that of *C. ovalis* than of *C. hirta*.

Hammer Sedge.

French, *Carex hérissé*. German, *Kurzhaarige Segge*.

GROUP Z.—COMOSÆ.

Rootstock caespitose, without stolons. Spikes rather approximate. Male spike 1 with a filiform bract at the base. Female spikes 2 to 5, approximate, dense, ultimately drooping, on slender greatly exerted stalks, at first erect, at length drooping. Glumes of the female flowers green or greenish-white, longly aristate. Bracts all foliaceous, long, usually exceeding the apex of the male spike, the lowest only with a very short closed sheath. Fruit green or olive, afterwards brownish-olive, ultimately spreading-reflexed, lanceolate, bluntly trigonous, moderately inflated, glabrous, strongly-ribbed, with a very long smooth slender beak terminating in 2 very long diverging awnlike teeth. Stigmas 3. Nut trigonous, loosely covered by the perigynium, which greatly exceeds it in length.

Stem leafy throughout. Leaves broad.

SPECIES LX.—*CAREX PSEUDO-CYPERUS*. *Lin.*

PLATE MDCLXXXV

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXV.

Billot, Fl. Gall. et Germ. Exsicc. No. 3433.

Rootstock caespitose, without stolons. Stem erect, leafy throughout,

very stout, rather stiff, acutely-triquetrous, rough. Leaves as long as or longer than the stem, rather flaccid, very broadly linear, flat, very rough on the margins, pale bright green, not glaucous either above or beneath. Male spike 1, rather shortly stalked, at first erect, afterwards drooping, with very long subulate-aristate green glumes with pale reddish-brown scarious margins below the long rough terminal awn. Female spikes 3 to 5 (usually 4), approximate, all at the apex of the stem, on very long greatly exerted stalks, at first erect, afterwards pendulous and arching, thickly cylindrical, very dense, very many-flowered. Bracts very shortly sheathing, with very long foliaceous laminae exceeding the apex of the male spike. Glumes of the female flowers subulate-aristate, tapering into very long rough awns, green, with narrow white scarious margins at the base, nearly as long as but much narrower than the fruit. Fruit ultimately spreading-reflexed, stipitate, lanceolate-acuminate, plano-convex-trigonous, moderately inflated, with numerous strong nearly equal ribs, glabrous, green, ultimately yellowish-olive, insensibly narrowed into a long rather thick straight smooth 2-toothed beak, about as long as the rest of the fruit; teeth very long, subulate, suberect, about one-third the length of the rest of the beak. Stigmas 3. Nut pale yellow, elliptical, narrowed at each end, triquetrous, rather closely covered on the sides by the perigynium, which however greatly exceeds it in length.

On the margins of ponds and ditches, and in wet woods. Rather rare, but generally distributed throughout the south of England, extending north to Lancaster and York. It occurs near Forres in Elgin, but is said to have been planted there; Lightfoot gives it as occurring "in boggy places by the lakes in Isla, &c.," but no one else appears to have found it in Scotland. Local and rare, but widely distributed in Ireland.

England, [Scotland,] Ireland. Perennial. Summer.

Stem 1 to 3 feet high, with the upper leaves longer than the lower ones. Leaves about $\frac{1}{2}$ inch broad. Male spike 1 to 2 inches long. Lowest bract often 1 foot or more long. Female spikes 1 to 3 inches long. Fruit $\frac{1}{4}$ inch long.

C. Pseudo-cyperus, which is by far the handsomest of the British *Carices*, resembles no other species of the genus, except the North American *C. comosa*, *Boott*.

Cyperus-like Sedge.

French, *Carex faux souchet*. German, *Cypergrasähnliche Segge*.

GROUP Z (*bis*).—VESICARIÆ.

Rootstock subcæspitose or more or less creeping, with short or elongate stolons. Spikes rather remote, rarely approximate. Male spikes 2 to 5, rarely only 1, the uppermost one stalked. Female spikes 1 to 4, dense, on exserted stalks, the upper ones shortly stalked or subsessile. Glumes of the female flowers reddish-brown or chocolate-brown, acute or subaristate. Bracts foliaceous, long, without closed sheaths. Fruit brown or yellow or olive-yellow, usually ovoid, scarcely trigonous, considerably or greatly inflated, often bladderlike, more or less distinctly ribbed, glabrous or rarely pubescent, with a long or short beak ending in 2 small teeth. Stigmas 3, rarely 2. Nut trigonous or triquetrous, or lenticular when there are but 2 stigmas, very loosely covered by the perigynium.

Stem leafy in the lower half or only at the base. Leaves broad or rather narrow.

SPECIES LXI.—**CAREX PALUDOSA.** *Good.*

PLATE MDCLXXXVIII.

Billot, Fl. Gall. et Germ. Exsicc. No. 3483.

C. acuta, *Curt.* Flora Lond. fasc. iv. Tab. LXI. (non *Linn.*)

Rootstock extensively creeping with long stolons. Stem erect, leafy throughout, very stout, stiff, acutely triquetrous, rough in the upper part. Leaves shorter than the stem, rather firm, very broadly linear, flat, rough on the margins, bright green above, glaucous beneath. Male spikes 2 to 3, erect, cylindrical, subobtuse, with long oblong dark purplish-brown glumes, those in the middle of the spike obtuse: anthers obtuse without any apiculus, or with an extremely short one. Female spikes 2 to 4 (usually 3), rather remote, the lowest ones shortly stalked, the rest subsessile or sessile, erect, rather thickly cylindrical, obtuse, very dense, very many-flowered. Bracts not sheathing, foliaceous, the lowest one with a long foliaceous lamina exceeding the male spike. Glumes of the female flowers lanceolate, acute, often tapering into short rough awns or long cusps, dark purplish-brown, with narrow green midribs, usually a little shorter and always narrower than the fruit. Fruit spreading-ascending, ultimately spreading, substipitate, ovate-lanceolate, acuminate, conico-ovoid-trigonous, considerably inflated, rather strongly ribbed, glabrous, rather dim, greyish-brown, rather gradually narrowed into a rather short straight smooth or slightly deflexed 2-toothed beak, about

one-fourth the length of the rest of the fruit; teeth short, ascending. Stigmas 3. Nut brown, substipitate, broadly oval, triquetro-trigonus, loosely covered by the perigynium.

Var. α , *genuina*. Gren. & Godr.

PLATE MDCLXXVIII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXVI.

C. paludosa, Reich. Ic. l.c. p. 28.

Glumes of the female flowers obtuse or shortly cuspidate.

Var. β , *Kochiana*. Gaud.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXI.

C. Kochiana, D.C. Reich. Ic. l.c. p. 29.

C. spadicea, Roth; test. Koch.

Glumes of the female flowers terminated by a long rough awn, exceeding the fruit.

In wet meadows and in ditches, and by the sides of streams. Not uncommon, and generally distributed in England. Less frequent in Scotland, though extending north to Argyle, Ross, and Moray. Rare and local in Ireland, and confined to the east and north-east. Var. β , "Littlehampton, Sussex, Mr. W. Mitten" (*Bab.*); Sandown, Isle of Wight, Mr. A. G. More: forms approaching it are often met with growing with var. α .

England, Scotland, Ireland. Perennial. Early Summer.

Stems 1 to 4 feet high. Leaves $\frac{3}{8}$ to $\frac{5}{8}$ inch broad. Terminal male spike 1 to 2 inches long. Lowest female spike $1\frac{1}{4}$ to 3 inches long. Fruit $\frac{1}{2}$ inch long.

Var. β scarcely deserves notice as a variety, the transition from vars. α to β is so gradual that it is impossible to say where one begins and the other ends. The alleged differences in the fruit are not constant. The shape and direction of the beak varies in both.

C. paludosa is often mistaken for *C. acuta*, many of the specimens named "*C. acuta*" from Scotland belong to *C. paludosa*. It may be distinguished from *C. acuta* by its broader leaves, greener above and more glaucous beneath; spikes erect at the time of flowering; stigmas 3. When in fruit, no mistake is possible, for not only are the spikes of *C. paludosa* much thicker and blunter than those of *C. acuta*, but the fruit is not lenticular and has a conspicuous beak.

Lesser Pond Sedge.

French, *Carex des marais*. German, *Sumpf-Segge*.

SPECIES LXII.—**CAREX RIPARIA.** *Curt.*

PLATE MDCLXXIX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXVIII.*Billot,* Fl. Gall. et Germ. Exsicc. No. 2160.

Rootstock extensively creeping, with long stolons. Stem erect, leafy throughout, very stout, stiff, acutely triquetrous, rough in the upper part. Leaves a little shorter than the stem, rather firm, very broadly linear, flat, rough on the margins, bright green above, glaucous beneath. Male spikes 2 to 5, fusiform-cylindrical, acute, with very long lanceolate-acuminate purplish-brown (fading to pale brown) glumes, all of which are very acute: anthers terminated by a mucro as long as the width of the anther. Female spikes 3 or 4, rather remote, the lowest ones shortly stalked, the rest subsessile or sessile, erect, more rarely drooping and slightly arching, thickly cylindrical or cylindrical-fusiform, subacute (from there being a few barren flowers at the apex), very dense, very many-flowered. Bracts not sheathing, foliaceous, the lowest one with a long foliaceous lamina exceeding the male spike. Glumes of the female flowers lanceolate, acuminate, with subulate smooth points, dark purplish-brown, with narrow green midribs, longer but narrower than the fruit. Fruit spreading-ascending, ultimately spreading, substipitate, ovate-lanceolate, acuminate, conico-trigonous, greatly inflated, rather strongly ribbed, glabrous, slightly shining, pale yellowish-brown, gradually narrowed into a short straight smooth 2-toothed beak, about one-fourth the length of the rest of the fruit; teeth rather short, diverging. Stigmas 3. Nut pale yellow, oval-obovate, trigono-triquetrous.

In wet meadows and by the sides of ditches, streams, and lakes. Rather common. Generally distributed in England. Rare in Scotland, and not known to occur north of Banff. Local and rather rare, but widely distributed in Ireland.

England, Scotland, Ireland. Perennial. Early Summer.

Very similar to *C. paludosa*, with which it is frequently confounded, but a stouter plant. Leaves $\frac{1}{2}$ to $\frac{3}{4}$ inch broad. Terminal male spike $1\frac{1}{2}$ to 2 inches long, thicker in the middle than that of *C. paludosa*, more acute, and with longer and much more acute glumes. Lowest female spike 2 to 3 inches long or more, and as thick as a man's little finger. Fruit $\frac{1}{2}$ to $\frac{3}{8}$ inch long, consequently much larger than that of *C. paludosa*, and paler in colour, especially when young, at which period it is considerably tinged with yellow; beak of the fruit with much longer teeth in *C. riparia* than in *C. paludosa*.

In both these species the male spike is trigonous before the anthers appear. The difference between the anthers of *C. paludosa* and *C. riparia* appears to be constant.

Greater Pond Sedge.

French, *Carex des rives*. German, *Ufer-Segge*.

SPECIES LXIII.—**CAREX AMPULLACEA.** *Good.*

PLATE MDCLXXX.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXXVII.

Billot, Fl. Gall. et Germ. Exsicc. No. 2757.

Rootstock extensively creeping, the branches elongate, producing tufts of stems and barren shoots at the apex, and short stolons. Stem erect, leafy only at the base, rather slender, somewhat wiry, very bluntly trigonous, smooth up to the lowest spike. Leaves as long as or longer than the stem, very firm, linear, channelled, not keeled, rough on the margins towards the apex, glaucous and strongly ribbed above, bright green beneath. Male spikes 2 or 3 (rarely 1 or 4), the uppermost one sessile, narrowly cylindrical, acute, with rather long oblong or lanceolate-oblong subobtusate reddish-brown or orange-brown glumes usually with green midribs and narrow white scarious margins. Female spikes 2 or 3, more rarely 1, rather remote, the lowest one rather shortly stalked, the upper ones shortly stalked or subsessile, at first erect, afterwards slightly drooping or arching-pendulous, rather thickly cylindrical, obtuse or abruptly pointed, very dense, very many-flowered. Bracts not sheathing, foliaceous, the lowest one with a long foliaceous lamina exceeding the male spike. Glumes of the female flowers very narrowly lanceolate, subacute or shortly mucronate, purplish-brown, with narrow green midribs and concolorous margins, shorter and much narrower than the fruit. Fruit ultimately squarrosely spreading, stipitate, roundish-ovate or broadly oval-ovate, abruptly acuminate, ovoid or subglobose, scarcely trigonous, greatly inflated and bladder-like, faintly ribbed, with the marginal ribs stronger than the others, glabrous, shining, pale yellow, tinged with green or brown, abruptly narrowed into a rather short slightly deflexed smooth 2-toothed beak about one-third the length of the rest of the fruit. Stigmas 3. Nut pale yellow ("brown," *Gren. & Godr.*), roundish-obovate, trigonotriquetrous, very loosely covered by the perigynium.

In ditches and the water at the margins of lakes, and in wet meadows. Generally distributed. Common in the north, extending to Orkney and Shetland. Abundant in Ireland.

England, Scotland, Ireland. Perennial. Early Summer.

Stems 1 to 3 feet high, with very blunt angles. Leaves sheathing the base of the stem, the sheaths with their apices all reaching the same height on the stem, so that the laminae all start from the same height; lamina $\frac{1}{2}$ to $\frac{1}{4}$ inch broad, very deeply channelled. Terminal male spike 1 to 2 inches long. Lowest female spike $1\frac{1}{4}$ to 3 inches long. Fruit $\frac{1}{2}$ inch long.

A well marked species, which cannot be confounded with any of the foregoing species.

Bottle Sedge.

French, *Carex ampoulé*. German, *Geschnäbelle Segge*.

SPECIES (?) LXIV.—**CAREX INVOLUTA.** *Bab.*

PLATE MDCLXXXI.

C. vesicaria, var. *involuta*, *Bab. Man. Brit. Bot. ed. vi. p. 392.*

C. ampullacea, var., *Baker & Hunt*, in Report of Bot. Exchange Club for 1863, p. 9.

Rootstock extensively creeping, with elongate branches producing tufts of stems and barren shoots at the apex and short stolons. Stem erect, leafy only at the base, slender, somewhat wiry, bluntly triangular, rough below the lowest spike. Leaves as long as or longer than the stem, narrowly linear, channelled, not keeled, rough on the margins towards the apex, glaucous and faintly ribbed above, bright green beneath. Male spikes 2, rarely 1 or 3, the upper one longly stalked, linear-cylindrical, very acute, with lanceolate subobtuse reddish-brown or orange-brown glumes with rather broad scarious margins. Female spikes 1 or 2, rarely 3, rather remote, the lowest one rather shortly stalked, the upper shortly stalked, at first erect, afterwards slightly drooping, cylindrical, slightly tapering towards each end, subacute, rather dense, very many-flowered. Bracts not sheathing, foliaceous, the lowest one with a long foliaceous lamina exceeding the male spike. Glumes of the female flowers very narrowly lanceolate, subacute or shortly mucronate, purplish-brown, with narrow green midribs and pale scarious margins, shorter and much narrower than the fruit. Fruit ultimately spreading-ascending, stipitate, elliptical-ovate, gradually acuminate, conico-ovoid, scarcely trigonous, greatly inflated and bladderlike, very faintly ribbed, with the marginal ribs stronger than the others, glabrous, shining, pale greenish-yellow, sometimes tinged with brown, gradually narrowed into a rather short straight smooth 2 toothed beak about one-third the length of the rest of the fruit. Nut pale yellow, roundish-obovate, trigono-trigonous, very loosely covered by the perigynium.

In bogs. Very local. Not known to occur except in Cheshire,
VOL. X.

Hale Moss, near Altringham, Mr. J. Sidebotham; "Congleton, Mr. E. Wilson" (*Bab.*); north-western margin of Oakmere, Mr. Charles Bailey.

England. Perennial. Early Summer.

Stems 1 to 2 feet high, slender. Leaves $\frac{1}{2}$ to $\frac{1}{4}$ inch broad. Terminal male spike 1 to $1\frac{1}{2}$ inch long. Lowest female spike 1 to 2 inches long. Fruit $\frac{1}{8}$ inch long.

A most puzzling plant, which I have been obliged to throw into the form of a species from being quite unable to decide whether it should be referred to *C. ampullacea* or to *C. vesicaria*, though I believe it to be much nearer the former, and probably a marked variety of it.

The leaves are precisely similar to those of *C. ampullacea*, but the stems are more triangular, and are decidedly rough on the margins beneath the lowest spike. The terminal male spike in all the specimens I have seen is conspicuously stalked. The female spikes have the fruit much more lax and not at all squarrosely spreading, the fruit is gradually attenuated into the beak, and not abruptly so as in *C. ampullacea*, but the nut is indistinguishable from that of the last-named species.

From *C. vesicaria* it differs in the branches of the rootstock not being chordorrhizal; the leaves being much narrower, channelled, and glaucous above, not flat and green on both-sides; in the stem having much blunter angles, which are less rough and that only for a very little way below the uppermost spike. The female spikes of *C. involuta* are more slender and more tapering than those of *C. vesicaria*, and the fruit is much smaller and rather more shining. The nut is much shorter and broader in proportion.

Mr. Sidebotham informs me that *C. ampullacea* and *C. vesicaria* do not grow together at the Hale Moss station for *C. involuta*, so that it cannot well be a hybrid between these two species. Further, the nuts are perfectly developed, though some fresh ripe ones received from Mr. Sidebotham refused to germinate, to my great disappointment, as I hoped to have seen the plant in cultivation before writing this description.

Involute-leaved Sedge.

SPECIES LXV.—*CAREX VESICARIA.* *Lim.*

PLATE MDCLXXXII.

Reich. Ic. Fl. Germ. et Helv. Vol. VIII. Tab. CCLXXVI.

Billot, Fl. Gall. et Germ. Essicc. No. 1575.

Rootstock creeping, with short somewhat chordorrhizal branches and short stolons. Stem erect, leafy in the lower half, rather slender, scarcely wiry, acutely triquetrous, very rough in the upper half. Leaves as long as or longer than the stem, linear or broadly linear, flat, keeled,

rough on the margins throughout, faintly ribbed above, bright green both above and beneath. Male spikes 1 to 4, usually 2, the upper one longly stalked, more rarely shortly stalked, linear-cylindrical, very acute, with oblong-lanceolate subobtusely pale reddish-brown or fawn-coloured glumes with rather broad scarious margins or at least apices. Female spikes 1 to 3, usually 2, rather remote, the lowest one shortly stalked, the upper one sessile or subsessile, erect, ultimately usually inclined or slightly drooping, thickly cylindrical, scarcely tapering towards the apex, obtuse or abruptly acute, dense, many-flowered. Bracts not sheathing, foliaceous, the lowest one with a long foliaceous lamina exceeding the male spike. Glumes of the female flowers narrowly lanceolate, acute, purplish-brown, with green midribs and narrow pale scarious margins, much shorter and much narrower than the fruit. Fruit ultimately ascending-erect, stipitate, ovate, gradually acuminate, conico-ovoid, scarcely trigonous, greatly inflated and bladderlike, strongly ribbed, with the marginal ribs scarcely stronger than the others, glabrous, shining, olive-green, ultimately yellow or yellowish-brown, gradually narrowed into a rather short straight smooth 2-toothed beak, about one-third the length of the rest of the fruit. Stigmas 3. Nut pale yellow ("brown," *Gren. & Godr.*), oval-oblanccolate, triquetrous, very loosely covered by the perigynium.

In marshes, and by the borders of ponds and lakes. Rather rare. Generally distributed in England. Rare in Scotland, extending north to Isla and Moray. Rather local, but widely distributed in Ireland.

England, Scotland, Ireland. Perennial. Early Summer.

Rootstock less extensively creeping than that of *C. ampullacea*, and its branches usually with several stems one before the other, so as to be chordorrhizal. Leaves $\frac{1}{2}$ to $\frac{1}{4}$ inch broad, with the tips of the sheaths extending one above the other, so that some of the laminae are a little higher than the others. Terminal male spike 1 to 2 inches long. Lowest female spike 1 to $1\frac{1}{2}$ inch long. Fruit $\frac{1}{4}$ inch long or even rather more.

A very distinct species, resembling none but the dubious *C. involuta*, which Professor Babington considers merely a variety of it. The differences between the two have been already mentioned under *C. involuta*.

Bladder Sedge.

French, *Carex en vessie*. German, *Blasensegge*.

SPECIES LXVI.—**CAREX SAXATILIS.** “*Linn.*” *Fries.*

PLATES MDCLXXXIII. MDCLXXXIV.

Rootstock creeping, with short somewhat chordorrhizal branches and short stolons. Stem ascending or erect, leafy in the lower half, rather slender, not wiry, triangular, slightly rough in the upper half. Leaves nearly as long as the stem, narrowly linear, flat, keeled, rough on the margins towards the apex, faintly ribbed above, bright green both above and beneath. Male spike 1, more rarely 2, the upper or only one rather longly stalked, linear-fusiform, very acute, with oblong-lanceolate subobtuse dark chocolate-brown glumes with narrow silvery scarious margins. Female spikes 1 to 3, rather remote or subapproximate, the lowest one shortly stalked, the uppermost sessile, at first erect, afterwards inclined, oval-ovoid or oblong-ovoid, obtuse, dense, many-flowered. Bracts not sheathing, foliaceous, the lowest one with a rather long foliaceous lamina nearly equalling the male spike. Glumes of the female flowers oval or oval-lanceolate, subobtuse or subacute, dark purplish-brown or purplish-black, with narrow pale or concolorous midribs and margins, much shorter and narrower than the fruit. Fruit ultimately ascending, stipitate, oval or ovate, rather abruptly acuminate, ovoid, scarcely trigonous, greatly inflated and bladderlike, rather faintly ribbed, or with no ribs but the marginal ones, which are stronger than the others when the latter are present, glabrous, shining, olive, tinged with purplish-brown or wholly purplish-brown, sometimes nearly black, more or less abruptly narrowed into a short straight smooth 2-toothed beak, not more than one-fifth the length of the fruit, and often considerably shorter. Stigmas 2. Nut pale yellowish-brown, roundish-obovate, lenticular, but more convex on the back than on the face, very loosely covered by the perigynium.

SUB-SPECIES I.—**Carex Grahami.** *Boott.*

PLATE MDCLXXXIV.

C. saxatilis, var. β *Grahami*, *Hook. & Arn. Brit. Fl. ed. viii. p. 510.* *Hartm. Handbk. i Scand. Fl. ed. ix, p. 224.*

C. vesicaria alpigena, *Fries, Nov. Fl. Succ. Mant. III. p. 142; and Summ. Veg. Scand. p. 70.*

Stem erect. Leaves rather broadly linear. Male spikes often 2. Female spikes 2 or 3, the lowest one rather remote, oblong-ovoid. Glumes of the female flowers oval-lanceolate, subacute, dark brown, one-half the length of the fruit. Fruit ovate-ovoid, distinctly ribbed,

rather abruptly narrowed into a beak about one-fifth the length of the fruit. Nut abortive in all the specimens I have seen ("oblong-compressed, triquetrous below," *Bab.*).

In wet places on mountains. Very rare. Discovered by Dr. Wight in July 1832, about half-way up the cliff on the south side of Glen Fiadh, Clova, Forfarshire; Ben Cruban, near Killin, Perth.

Scotland. Perennial. Summer.

Stem 1 to 2 feet high. Leaves $\frac{1}{8}$ to $\frac{1}{6}$ inch broad. Male spike $\frac{1}{2}$ to 1 inch long. Lowest female spike $\frac{2}{3}$ to 1 inch long. Fruit nearly $\frac{1}{4}$ inch long.

Dr. Andersson considers this an alpine starved form of *C. vesicaria*, but the stigmas seem to be always 2, and the nut lenticular; besides this the glumes are much broader, blunter, and darker-coloured; the spikes shorter; the fruit darker-coloured, with fewer and fainter ribs, and more abruptly narrowed into the beak, which is considerably shorter.

Graham's Sedge.

SUB-SPECIES II.—*Carex pulla*. Good.

PLATE MDCLXXXIII.

C. saxatilis, var. *a*, *Hook. & Arn.* Brit. Fl. ed. viii. p. 510. *Hartm.* Handbk. i Scand. Fl. ed. ix. p. 224.

Stem ascending. Leaves linear. Male spikes 1, rarely 2. Female spikes 1 or 2, very rarely 3, subapproximate, oval-ovoid. Glumes of the female flowers oval, subobtuse, purplish-black, at least three-fourths the length of the fruit. Fruit roundish-ovoid, obsoletely ribbed, very abruptly terminated by a beak about one-sixth the length of the fruit. Nut suborbicular-obovate, lenticular, more convex on the back than on the face.

In wet places, by the sides of springs and streams, on high mountains. Rare. Benvoirlich, Dumbarton; Clova Mountains, Forfarshire; Breadalbane, Perthshire; Cairntowl, Aberdeen; Sutherland; and Skye. The only places where I have collected it are on the Breadalbane Mountains, where it is not uncommon, especially on those overlooking Glen Lochy; and on Cairntowl, Braemar.

Scotland. Perennial. Summer.

Plant growing in small tufts, arranged in a chordorrhizal manner upon the branches of the rootstock. Stems 4 inches to 1 foot high, usually ascending from a curved base. Leaves $\frac{1}{8}$ to $\frac{1}{5}$ inch broad. Male spike $\frac{1}{2}$ to $\frac{3}{4}$ inch long. Lowest female spike $\frac{2}{3}$ to $\frac{5}{8}$ inch long. Fruit $\frac{1}{6}$ inch long.

C. pulla and *C. Grahami* are perhaps only two varieties of one species, but I have never gathered the latter: have only a single specimen from each of its two known localities, and as these two specimens are very different from any of the hundreds of specimens of *C. pulla* which I have seen growing, I have treated them as subspecies. Perhaps a larger series of specimens of *C. Grahami* would fill up the gap between the two forms. *C. pulla* is smaller in all its parts, and both the male and female spikes fewer than in *C. Grahami*; the bracts are broader and blunter, the fruit much shorter and very much more abruptly acuminate into the beak, and the beak is shorter. The colour of the female spikes, both of their glumes and of their fruit, is darker.

Dr. Boott in "Eng. Bot. Suppl.," though he does not describe the nut of *C. Grahami*, appears to have found it perfect; and Professor Babington seems also acquainted with it. Were the nut abortive there would be little doubt remaining of *C. Grahami* being a form of *C. pulla* with the perigynia much enlarged and barren such as are found in several species of *Carex*.

Russet Sedge.

EXCLUDED SPECIES.

ERIOPHORUM CAPITATUM. *Host.*

E. Scheuchzeri, *Hoppe*. *Koch*, Syn. Fl. Germ. et Helv. ed. ii. p. 60; et *Auct. Plur.*

Said to have been found by Mr. George Don in 1810, "by the side of a rivulet on Ben Lawers, near the limits of perpetual snow." As there are no "limits of perpetual snow" on Ben Lawers, or any other Scotch mountain, the description does not tend to inspire confidence in Mr. Don's accuracy, and throws doubt on the source of his specimens, if he really distributed *C. capitatum*, as the late Dr. Walker Arnott seems to imply when he says, "we fear that Mr. Don had accidentally mixed some foreign or cultivated specimens with *E. vaginatum*" ("Brit. Fl." ed. viii.). The figure in "English Botany," ed. i. No. 2387, is certainly nothing more than *E. vaginatum*, and the only specimen of Don's supposed *E. capitatum* which I ever saw—viz., that which was in the herbarium of the Botanical Society of London—belonged without doubt to the same species.

CAREX BRIZOIDES. *Linn.*

Said to be gathered in Studley Wood, near Ripon, Yorkshire: Mr. William McIvor. If it really were found there it has probably

been planted, as it is a species which does not grow in the north or north-west of Europe.

CAREX DREJERI. *Lange.*

C. cæspitosa, *Fries*; *Bab. Man. Brit. Bot.* ed. viii. p. 382.

Said by Fries to have been sent him from Britain by the late Dr. Greville. Probably a mistake through the transposition of labels.

CAREX HORDEIFORMIS. *Wahl.*

C. secalina, *Sm. Engl. Fl. Vol. IV.* p. 126.

Said to have been found in a den at Panmure, about nine miles east of Forfar, by Mr. T. Drummond; but in the "British Flora" it is said, "we have reason to believe that, although Mr. Drummond supposed he had found the specimens in one of his excursions, but was uncertain where, they had been accidentally collected in his own garden, where this species was cultivated together with other curiosities which the late Mr. Don had amassed there."

ERRATA.

- Page 7, line 1 for *Beck.* read *Bick.*
- „ 30 after line 27 insert *J. articulatus* "*Linn.*" *Fries*, Summ. Veg. Scand. p. 65.
- „ 37 line 7 for *Bick.* read *Bich.*
- „ 38 „ „ *Bothnicus* „ *Bottnicus.*
- „ 44 „ 13 „ *G. Germanicum* „ *C. Germanicum.*
- „ 55 after line 28 insert *Trichophorum cæspitosum*, *Hartm.* Handb. i. Scand. Fl. ed. ix. p. 221.
- „ 58 line 37 for *S. Saviana* read *I. Saviana.*
- „ 61 „ 2 „ *MDXCVII.* „ *MDXCV.*
- „ 64 „ 30 „ *MDXCVII.* „ *MDXCVIII.*
- „ 70 after line 27 insert *Trichophorum alpinum*, *Pers.* *Hartm.* Handb. i. Scand. Fl. ed. ix. p. 221.
- „ 74 line 36 for *MDCVI.* read *MDCVII.*
- „ 76 „ 38 „ *Hoppy* „ *Hoppe;*
- „ 84 after line 30 insert *C. juncifolia*, *All.* *Gaud.* Agros. vol. II. p. 85.
- „ 92 line 24 after *MDCXXIV.* add *MDCXXV.*
- „ 127 „ 35 for immediate read immediately.
- On Plate MDCXXXVI. for "*Carex VahlII*" read *Carex alpina.*
- On „ MDCXLVII. „ "*Carex eu-limosa*" „ *Carex limosa.*
- On „ MDCLXXX. dele "*var. genuina*" and "*var. a.*"
- On „ MDCLXXXI. for "*Carex ampullacea*, *var. ambigua*, *Bottle Sedge*, *var. β,*" read *Carex involuta*, *Involuto-leaved Sedge.*
- On „ MDCLXXXIII. dele "*var. genuina*," and "*var. a.*"
- On „ MDCLXXXIV. for "*Carex pulla*, *var. Grahami*, *Russet Sedge*, *var. β,*" read *Carex Grahami*, *Graham's Sedge.*

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[Species in CAPITALS, Sub-species in small letters, and Synonyms in *italics*.]

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1724

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Tawny Sedge, var. β .



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Yellow Sedge, var. β .



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B. 579.

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F. B. 75

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Bottle Sedge, var. β .



E. B. 779.

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E. D. 2045.

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B. S. 2923.

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